# Viewfinder and Guardians

## European FP6 Projects
## Collection of news items

http://www.shu.ac.uk/mmvl/research/viewfinder/
http://www.shu.ac.uk/mmvl/research/guardians/

# 1 Digital Yorkshire

http://www.digitalyorkshire.org.uk/newsdetails.aspx?id=416


**NEWS DETAILS**

## Firefighter's guardian angel is a palm size robot

Industrial fires, explosions and chemical contamination are dangerous circumstances fire and rescue teams face on a daily basis. However small explorer robots, currently being created by Sheffield Hallam University, will soon be the first team to enter buildings to assess for structural soundness, dangerous airborne chemicals and locate small but smoke generating industrial fires. Ordinarily, these instances could not only impede rescue of casualties through time delay, but also endanger the rescuer.

Jacques Penders, a senior research fellow at Sheffield Hallam, is working in partnership with South Yorkshire Fire and Rescue Service and four other European organisations, to develop two mini robotic miracles. Named the 'Guardians' and the 'Viewfinders', both robots are just 16cm in diameter.

Jacques said: "In fire and rescue there are many hidden dangers, such as structural soundness of buildings, or when thick smoke is masking the rescuers entrance or escape route, which can severely impair their senses. The Guardian and Viewfinder robots will assist in the search and rescue by ensuring the communication link and helping the human team to estimate the safety of the path they are taking and the best direction to follow."

Time is critical, especially at search and rescue incidents. Initially fire crews might be committed to the incident to lay out guidelines and mark out a route to the fire or casualties, and, just as importantly, a safe route back to the outside.

Unfortunately this basic process can lead to tragedies such as at Gillender Street, London in 1992 when two fire fighters died. The victims became confused in the smoke and lost their exit route. They couldn't be found due to thick smoke when their air ran out. The Guardian robots could help avoid this situation.

The intelligent Guardians work in large teams of thirty, communicating independently to each other and the firefighters; similarly to a mobile phone connection. They distance themselves as beacons, depending on the signal strength, to ensure constant contact. The swarm then gleans information from each of their routes to detect fires, human danger and

obstacles which are then reported back to the firefighters.

Neil Baugh, Station Manager from South Yorkshire Fire and Rescue said: "It is not like in the movies where rescuers can go straight into a situation and save casualties. As the incident commander I have to ensure the safety of my team first in order to help others. The creation of these robots will help save time, and assist in the safety assessment of the incident. This is vital time we can then spend in rescuing casualties."

The Viewfinder robots use chemical sensors and video cameras to map safe locations for the crew to access in partially destroyed industrial sites, after events such as explosions. Working in a team of three, this information will be communicated back to a central human user point.

Jacques Penders, who works in the Materials and Engineering Research Institute at Sheffield Hallam, concludes: "Terrorism and particularly the London bombings have put pressure on fire and rescue services to be more aware of chemical dangers. But there is a lot of information they need to know, and their full-time job is fighting fires! The ongoing relationship between ourselves and South Yorkshire Fire and Rescue Service will mean we can help by sharing our knowledge with them."

Both projects have been highly commended in the European Commissions' evaluation and began in January 2007. Over the next three years the techniques will be further developed and adjusted for firefighting. These advanced techniques create opportunities that will be transferable into the home, where robots may assist handicapped residents.

Other international partners include Belgium's Royal Military Academy and Space Applications Services. Italy's Galileo Avionica, Universita Degli Studi di Roma and Intelligence for Environment and Security. Poland's Przemyslowy Instytut Automatyki I Pomiarow (Polish institute for robotics) and Greece Eidikos Logariasmos Erevnon Dimokriteiou Panepistimiou Thrakis (University of Thrace); Heinz Nixdorf Institute Padeborn (Germany); ETU University Ankara, Turkey; University JAUME 1 Castellion (Spain); K-Team (Swiss robot manufacturer), Robotnik (Spanish Robot manufacturer) University of Coimbra, Portugal.

**Source:** Sheffield Hallam

# 2 Guardian Unlimited

http://blogs.guardian.co.uk/technology/archives/2007/01/18/fire_and_rescue_robots_could_save_lives.html

## Fire and rescue robots "could save lives"

**By Bobbie Johnson / Gadgets** 12:32pm

More robotic development in the steel city, as researchers at Sheffield Hallam university are building robots that will investigate fires before firefighters. Small explorer robots will soon be the first team to enter buildings to assess for structural soundness, dangerous airborne chemicals and locate small but smoke generating industrial fires. Ordinarily, these instances could not only impede rescue of casualties through time delay, but also endanger the rescuer.

Jacques Penders, a senior research fellow at Sheffield Hallam, is working in partnership with South Yorkshire Fire and Rescue Service and four other European organisations, to develop two mini robotic miracles. Named the 'Guardians' and the 'Viewfinders', both robots are just 16cm in diameter. Apparently the little beasties act somewhat like those crawler robots in Minority Report, working in teams that string together to send data back to the firefighters to let them know what's going on inside a building.

# 3 Yorkshire Post

http://www.yorkshiretoday.co.uk/ViewArticle2.aspx?SectionID=1084&ArticleID=1978842

## HI-TECH MINIATURE ROBOTS SET TO BE LATEST FIREFIGHTING RECRUITS

**Robert Sutcliffe**

**IN the old days miners used to take canaries down pits as an early-warning system to test for poisonous fumes.**

Now Sheffield Hallam University is developing teams of "canary test" robots designed to reduce on-the-job dangers and search times for fire rescue squads. Industrial fires, explosions and chemical contamination are dangerous circumstances fire and rescue teams face on a daily basis.

Soon these small explorer robots will be the first team to enter buildings to test for structural soundness, dangerous airborne chemicals and will locate smoke-generating industrial fires.

Jacques Penders, a senior research fellow at Sheffield Hallam, is working in partnership with South Yorkshire Fire and Rescue Service and four other European organisations, to develop two mini-robots.Named Guardian and Viewfinder, both robots are just six inches in diameter.

Jacques said: "In fire and rescue there are many hidden dangers, such as structural soundness of buildings, or when thick smoke is masking the rescuers' entrance or escape route. "The Guardian and Viewfinder robots will assist in the search and rescue by ensuring the communication link and helping the human team to estimate the safety of the path they are taking and the best direction to follow." The dangers of firefighting were graphically shown at Gillender Street, London, in 1992 when two firefighters died.

The victims became confused in the smoke and lost their exit route. They could not be found in the thick smoke. It is hoped that the Guardian robots could help avoid this type of situation.The intelligent Guardians work in large teams of 30, communicating independently to each other and the firefighters.

They adjust the distance between themselves and continually measure the strength of radio signals to ensure constant contact. The swarm then gleans information from each of their routes to detect fires, human danger and obstacles which are then reported back to the firefighters.

The Viewfinder robots use chemical sensors and video cameras to map safe locations for the crew to access in partially-destroyed industrial sites, after events such as explosions. This information will be sent back to a human operator.

18 January 2007

# 4 Hero

http://www.hero.ac.uk/uk/business/heat_seeking_robots.cfm

## Heat-seeking robots

Fire fighting: Jacques Penders with mini-robot prototype

**ALTHOUGH ROBOTICS has yet to achieve the kind of glamorous presence predicted by science fiction writers, the science continues to make rapid advances, displacing human operatives in an increasing number of repetitive, or dangerous activities.**

Firefighters attending industrial fires and explosions work in some of the most hazardous environments in the modern world. With the aim of making their work safer and more effective, researchers at Sheffield Hallam University are developing miniature explorer robots which can enter dangerous buildings in advance of fire and rescue squads to help assess risks and plan escape routes.

Jacques Penders, a senior research fellow at Sheffield Hallam, is working in partnership with South Yorkshire Fire and Rescue Service and European organisations, on a three-year project to develop two mini-robots, named the 'Guardian' and the 'Viewfinder'. These are each only 16cm in diameter, and are designed as swarm robots, which can enter buildings to assess for structural soundness and dangerous airborne chemicals, and locate small but smoke-generating industrial fires. Ordinarily, these hazards not only impede the rescue of casualties through time delay, but also endanger the rescuer.
Penders explained: "In fire and rescue there are many hidden dangers, such as structural weakness, or when thick smoke is masking the rescuers' entrance or escape route, which can severely impair their senses. The Guardian and Viewfinder robots will assist in the search and rescue by ensuring the communication link and helping the human team to estimate the safety of the path they are taking and the best direction to follow."
Time is critical, especially at search and rescue incidents. Fire crews' initial

task at incidents is often to lay out guidelines and mark out a route to the fire or to casualties, and, just as importantly, a safe route back to the outside. Unfortunately, this basic procedure can lead to tragedies such as at Gillender Street in London in 1992, when two fire fighters died. The victims became confused in the smoke and lost their exit route. They couldn't be found due to thick smoke when their air ran out.

The intelligent Guardians work in large teams of thirty, communicating independently with each other and the firefighters, similarly to a mobile phone connection. They distance themselves as beacons, depending on the signal strength, to ensure constant contact. The swarm then gleans information from each of their routes to detect fires, human danger and obstacles which are then reported back to the firefighters.

Neil Baugh, a Station Manager with South Yorkshire Fire and Rescue, said: "It is not like in the movies where rescuers can go straight into a situation and save casualties. As the incident commander I have to ensure the safety of my team first in order to help others. The creation of these robots will help save time, and assist in the safety assessment of the incident. This is vital time we can then spend in rescuing casualties."

The Viewfinder robots use chemical sensors and video cameras to map safe locations for the crew to access in partially destroyed industrial sites, after events such as explosions. Working in a team of three, this information will be communicated back to a central human user point

Penders, who works in the Materials and Engineering Research Institute at Sheffield Hallam, added: "Terrorism and particularly the London bombings have put pressure on fire and rescue services to be more aware of chemical dangers. But there is a lot of new information they need, and their full-time job is fighting fires! The ongoing relationship between ourselves and South Yorkshire Fire and Rescue Service will mean we can help by sharing our knowledge with them."

# 5 The Engineer (front page),

Technology News 29-1-07

http://www.e4engineering.com/liChannelID/6/Articles/297966/Robots+blaze+a+trail.htm

## Robots blaze a trail

**Email articleComment on this article**
Published: 29 January 2007 02:50 PM
Article Type: **Technology News**
Source: The Engineer

Two firefighters died when they were engulfed by smoke and lost their exit route while attending a blaze in London's East End in 1992. The smoke was so thick it was impossible to find them and they died when their air ran out.

Now an EU-funded project to develop swarms of palm-sized intelligent robots could help protect firefighters in dangerous, smoke-filled buildings and prevent this happening again.

Over three years the researchers aim to develop two types of rescue robot — the Viewfinder and the Guardian.

A team of 16cm Viewfinder explorer robots would be the first to enter a building in the event of a fire and would assess the air for dangerous chemicals, structural soundness and locate the heart of the fire.

### Remote operation

Jacques Penders, a senior research fellow at Sheffield Hallam University's materials and engineering research institute, is leading the project. He said the Viewfinders would work in a team of three and be operated remotely by a firefighter from a safe distance.

'Fire and rescue services want a means to access premises before they send in people,' he said. 'In the aftermath of an explosion you need to know it's safe.'

Once inside the building the Viewfinder would be able to operate with a degree of autonomy to scan the building's interior for possible danger. Equipped with a large array of chemical sensors it would also carry a range of cameras, including normal light and infrared imaging.

The robots would collect information about their surroundings then send it to the manned base station outside. The information would be processed on a screen and overlayed on a map of the area, allowing firefighters to plan a safe route.

After the first wave of Viewfinders, the Guardians would be sent in. They would operate in larger teams of about 30 individual robots and act as a wireless communications network. They will communicate between themselves and any firefighters in the building and build up an ad-hoc mobile network. They would distance themselves — like beacons — throughout the building, depending on the strength of the signal, to ensure constant contact.

'As they carry their own base station it means they can be used anywhere. We are particularly thinking of warehouses filled with smoke where you will expect a lot of metal, so normal wireless communications will not work,' said Penders.

As part of the research project the Guardians will be developed in two sizes, the wheeled, 16cm version and a 40x60cm prototype that moves on tracks.

Penders said firefighting teams would probably use a combination of the two sizes. He stressed that the robots are not designed to be used in rubble-strewn environments, but would be used to counter the effects of smoke.

**Sense of touch**

Once human firefighters enter the building it is intended that they will be guided along a safe path by the Guardians. The team is unsure what form the human-robot interface will take, but it likely that it will rely on the firefighter's sense of touch.

'One firefighter would be surrounded by 10-15 of these robots,' said Penders. 'Remember that visual and audio communication is hampered by breathing apparatus and the smoke so we are looking at a tactile interface of some sort attached to his body, so the robots could make clear to the firefighter where he is and which way he should move.'

The project is a pan-European effort. The small Guardians will be made by Swiss robot manufacturer K-Team, while Spanish robotics experts Robotnik will develop the larger ones. The Viewfinders will come from the Polish institute for robotics.

Penders' team is working alongside the South Yorkshire Fire and Rescue Service to validate their findings and test early prototypes.

He admitted that the project is extremely ambitious. 'It's high-risk research, but the rewards could be huge,' he said.

# 6 Cordis

http://www.futura-sciences.com/news-robots-epauler-pompiers-leurs-missions-dangereuses_10302.php

**HIGH-TECH**

## Des robots pour épauler les pompiers dans leurs missions dangereuses

**Source : CORDIS Nouvelles**, le 31/01/2007 à 10h02

**De l'extinction d'incendies industriels au traitement d'explosions et de leurs suites, la lutte contre le feu est par définition l'un des métiers les plus dangereux au monde. Une équipe de scientifiques vient de s'atteler à deux projets financés par l'UE dans le but de développer un essaim autonome de robots «canaris», conçus pour réduire les dangers et accélérer les recherches sur les lieux d'intervention.**

Ces explorateurs miniatures seraient la première équipe à pénétrer dans les bâtiments pour recenser les dangers et transmettre ensuite les informations à un « chef d'escadron » humain et au poste de commandement.

Oeuvrant en partenariat avec les services de secours et de lutte anti-incendie du Sud Yorkshire (SYFRS) ainsi que quatre autres organisations européennes, Jacques Penders, maître de recherches à l'université Hallam de Sheffield, encadre ce projet ayant pour but de développer deux mini-robots.

Baptisés « Guardians » et « Viewfinders », ces robots ne mesureront que 16 cm de diamètre et seront équipés d'une technique de communication mobile ainsi que de caméras de télévision/infrarouge (TV/IR), de radars laser (LADAR) et de deux types de capteurs permettant la détection de substances chimiques toxiques et la navigation.

« Les opérations de secours et de lutte anti-incendie recèlent de nombreux dangers, tels que la stabilité structurelle des bâtiments ou la présence de fumée épaisse masquant les voies d'entrée et de sortie aux équipes de secours, ce qui peut fortement les désorienter »,a déclaré J. Penders à CORDIS Nouvelles.

« Les robots Guardian et Viewfinder appuieront la recherche de victimes et les secours en assurant la communication et en aidant l'équipe humaine à évaluer la sûreté de la voie empruntée et la meilleure direction à suivre », a-t-il poursuivi.

Les Guardians travailleraient par vastes équipes d'une trentaine de robots qui recueilleraient chacun des informations sur les substances chimiques toxiques, les flammes et les obstacles artificiels rencontrés en chemin, et retransmettraient le tout aux pompiers grâce aux techniques de communication mobile telles que réseau local sans fil (WLAN), Bluetooth et Zigbee.

« Nous ne sommes pas au cinéma où les secouristes foncent tête baissée pour sauver des blessés. En tant que commandant d'opérations de secours, je dois avant tout veiller à la sécurité de mon équipe si je veux sauver des vies. La mise au point de ces robots va nous permettre de gagner du temps et de mieux appréhender les dangers qui nous guettent sur les théâtres d'incident. Autant de minutes vitales que nous pourrons consacrer à secourir les victimes », déclare Neil Baugh, chef de station aux SYFRS.

Les robots Viewfinder seront quant à eux équipés de capteurs chimiques et de caméras infrarouges afin de recenser des passages sûrs permettant à l'équipe de se frayer un chemin

à travers des sites industriels partiellement détruits. Opérant par équipe de trois, les robots relaieront ces informations vers un poste central humain, via une interface homme-robot spécialement conçue et développée par l'équipe de J. Penders.

« Le terrorisme et notamment les attentats de Londres ont contraint les services de secours et de lutte anti-incendie à se sensibiliser davantage aux dangers liés aux substances chimiques. Mais il leur faudrait assimiler quantité d'informations; or le métier de pompier est déjà un job à temps plein », déclare J. Penders. « La relation continue que nous entretenons avec les SYFRS va nous permettre de les épauler en partageant nos connaissances avec eux. »

Les deux projets ont démarré en janvier 2007 et devraient s'achever en 2010 avec des modèles de démonstration qui pourraient déboucher sur l'emploi de robots bel et bien réels par les pompiers, dans le cadre d'une profession où ils sont chaque jour amenés à braver la mort.

« Au cours des trois prochaines années, nous allons poursuivre le développement des techniques et les ajuster aux besoins de la lutte anti-incendie. Ces techniques modernes ouvrent des perspectives d'applications domestiques, dans le cadre desquelles les robots pourraient assister des personnes non voyantes et à mobilité réduite détection, produit chimique», déclare J. Penders.

Commenter cette news ou lire les commentaires


**Viewfinder**
**Crédits : Sheffield Hallam University**

# 7 Knowledge Rich

http://www.knowledge-rich.com/newsarticle.aspx?nw_id=993

## Mini robots to reduce risk for firefighters

Published: 22/01/2007

**Life saving miniature explorer robots under development at Sheffield Hallam University look destined to dramatically cut the dangers for our firefighters.**

Industrial fires, explosions and chemical contamination create dangers for fire and rescue teams on a daily basis. But small explorer robots, currently being created at Hallam, will soon be the first on the scene to assess structural soundness, detect toxic fumes and track down small but smoke generating industrial fires.

**"The creation of these robots will help save time and assist in safety assessment. This is vital time we can then spend in rescuing casualties"** *Neil Baugh, South Yorkshire Fire and Rescue*

Jacques Penders, a senior research fellow at Hallam is working in partnership with South Yorkshire Fire and Rescue Service and four other European organisations, to develop two mini robotic marvels. Named 'Guardians' and 'Viewfinders', both robots are just 16cm in diameter.

"In fire and rescue there are many hidden dangers, such as structural soundness of buildings, or when thick smoke is masking the rescuers entrance or escape route, which can severely impair their senses," said Penders. "The Guardian and Viewfinder robots will assist in search and rescue by ensuring the communication link and helping the human team to estimate the safety of the path they are taking and the best direction to follow."

It is hoped the new devices will help avoid tragedies such as at Gillender Street, London in 1992 when two fire fighters died. The victims became confused in the smoke and lost their exit route. They couldn't be found because of the smoke and their air ran out. The Guardian robots could help avoid the situation.

The intelligent Guardians work in large teams of 30, communicating independently to each other and the firefighters; in much the same way as a mobile phone connection. They distance themselves as beacons, depending on the signal strength, to ensure constant contact. The swarm then gleans information from each of their routes to detect fires, human danger and obstacles which are then reported back to the firefighters.

Neil Baugh, Station Manager from South Yorkshire Fire and Rescue said: "It is not like in the movies where rescuers can go straight into a situation and save casualties. As the incident commander I have to ensure the safety of my team first in order to help others. The creation of these robots will help save time, and assist in the safety assessment of the incident. This is vital time we can then spend in rescuing casualties."

The Viewfinder robots operate in a team of three and use chemical sensors and video cameras to map safe locations for the crew to access in partially destroyed industrial sites after explosions.

Penders, who works in the Materials and Engineering Research Institute at Hallam, added: "Terrorism and particularly the London bombings have put pressure on fire and rescue services to be more aware of chemical dangers. But there is a lot of information they need to know, and their full-time job is fighting fires.

"The ongoing relationship between ourselves and South Yorkshire Fire and Rescue Service will mean we can help by sharing our knowledge with them."

Over the next three years the techniques will be further developed and adjusted for firefighting. The advanced techniques create opportunities that will be transferable into the home, where robots may one day assist residents with disabilities.

# 8 Thai,

http://news.thaieurope.net/index.php?option=com_content&task=view&id=2160&Itemid=64

อียูพัฒนาหุ่นยนต์ช่วยดับเพลิง

โดย คณะผู้แทนไทยประจำประชาคมยุโรป

Friday, 02 February 2007

อาชีพเจ้าหน้าที่ดับเพลิงเป็นอีกอาชีพหนึ่งที่มีความเสี่ยงสูง
ดังนั้นทีมนักวิทยาศาสตร์ซึ่งได้รับการสนับสนุนเงินทุนจากโครงการของสหภาพยุโรปจึงได้พัฒนาหุ่นยนต์เพื่อช่วยลดเวลาค้นหาและ ความเสี่ยงในการทำงาน โดยหุ่นยนต์สำรวจขนาดเล็กนี้
จะเป็นหน่วยแรกๆที่ถูกส่งเข้าสู่ตัวอาคารที่เกิดเพลิงไหม้เพื่อสำรวจอันตรายและส่งข้อมูลสู่หัวหน้าทีมควบคุม

ทีมวิจัยพัฒนาซึ่งนำทีมโดย Dr Jacques Penders นักวิจัยอาวุโส จาก Sheffield Hallam University ได้ทำงานร่วมกับ South Yorkshire Fire and Rescue Service และองค์กรอื่นๆในสหภาพยุโรปอีก 4 แห่ง เพื่อพัฒนาสองหุ่นยนต์ขนาดเล็ก ซึ่งมีชื่อว่า 'Guardians' และ 'Viewfinders' โดยมีขนาดเส้นผ่าศูนย์กลางเพียง 16 เซนติเมตร ซึ่งประกอบด้วยเทคโนโลยีการสื่อสารล้ำยุคต่างๆ และเครื่องรับโทรทัศน์และกล้องอินฟาเรด (TV/IR) เรดาร์เลเซอร์(LADAR) และเครื่องรับสัญญาณสองชนิดสำหรับตรวจสอบสารเคมีที่เป็นพิษและระบบทิศทาง

Dr Jacques Penders ได้กล่าวว่า ในการจัดการกับอัคคีภัยมีภัยอันตรายอีกหลายอย่างซ่อนอยู่ เช่น
อันตรายจากโครงสร้างอาคาร หมอกควันปกคลุมช่องทางออก โดยหุ่นยนต์ Guardian และ Viewfinder
จะเป็นผู้ช่วยในการค้นหาและช่วยเหลือโดยการใช้อุปกรณ์สื่อสารเชื่อมต่อ
และช่วยทีมนักดับเพลิงในการประเมินความปลอดภัยและหาเส้นทางที่เหมาะสมและปลอดภัย

หุ่นยนต์ Guardians จะทำงานร่วมกับทีมงานขนาดใหญ่ในการเก็บข้อมูลในแต่ละเส้นทาง สารเคมีที่เป็นพิษ
และอุปสรรคต่างๆ โดยจะส่งผ่านข้อมูลที่ได้มาที่เจ้าหน้าที่ดับเพลิงโดยใช้เทคโนโลยีติดต่อเคลื่อนที่ เช่น เครือข่ายไร้สาย
(Wireless Local Area Network : WLAN) Bluetooth และ Zigbee ในขณะที่ หุ่นยนต์
Viewfinder จะมีอุปกรณ์ตรวจจับสารเคมี และกล้องอินฟาเรด เพื่อจับภาพเส้นทางที่ปลอดภัยสำหรับลูกทีม
โดยจะทำงานร่วมกับทีมขนาดเล็กประมาณสามคน โดยจะส่งข้อมูลกลับมาให้หัวหน้าทีมซึ่งเป็นมนุษย์ทำการตัดสินใจ

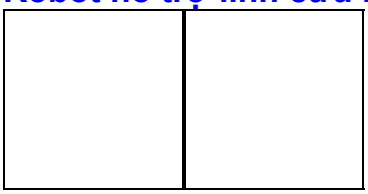
โครงการดังกล่าวได้เริ่มดำเนนการในเดือนมกราคม พ.ศ. 2550 และจะครบกำหนดในปี พ.ศ. 2053
โดยเทคนิคต่างๆที่ใช้สำหรับสร้างหุ่นยนต์ทั้งสองนี้อาจจะนำมาปรับพัฒนาเป็นหุ่นยนต์สำหรับที่พักอาศัยเพื่อช่วยเหลือคนพิการตาบอด หรือผู้ที่มีอุปสรรคในการเคลื่อนที่

สนใจค้นข้อมูลเพิ่มเติมได้ที่
http://www.shu.ac.uk/mmvl/research/guardians/
http://www.shu.ac.uk/mmvl/research/viewfinder/

# 9 Vietnamese

www.sokhcn.cantho.gov.vn/khcn/index.php?option=content&task=**view**&id=844&catid=&Itemid=

## Robot hỗ trợ lính cứu hỏa - 2/2/2007 10h:25

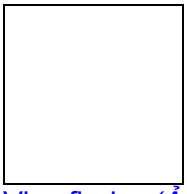


**Phối hợp với các dịch vụ khẩn cấp và cứu hỏa ở khu vực South Yorkshire (Anh) và bốn tổ chức khác thuộc châu Âu, Tiến sĩ Jacques Penders và các cộng sự thuộc Trường Đại học Sheffield Hallam (Anh) đã phát triển hai robot mini hỗ trợ lính cứu hỏa.**
Hai robot Guardian và Wiewfinder có đường kính chỉ 16cm và được trang bị kỹ thuật liên lạc di động cùng các camera truyền hình tia hồng ngoại, radar laser và hai thiết bị cảm ứng cho phép phát hiện các độc chất và định vị.

Robot Guardian sẽ làm việc theo từng nhóm gồm khoảng 30 robot. Mỗi robot sẽ thu thập các thông tin về chất độc, ngọn lửa, các chướng ngại vật gặp trên đường đi và sẽ gửi tất cả các thông tin cho lính cứu hỏa nhờ kỹ thuật liên lạc di động như mạng không dây địa phương (WLAN), Bluetooth và Zigbee.

Còn robot Viewfinder sẽ được trang bị các cảm ứng hóa học và camera tia hồng ngoại để tìm các lối đi an toàn cho phép các lính cứu hỏa khai thông lối đi qua các khu vực công nghiệp bị phá hủy một phần. Robot này sẽ làm việc theo nhóm 3 robot, gửi thông tin về tổng đài qua giao diện người-máy do nhóm nghiên cứu của Tiến sĩ Penders phát triển.

Hai dự án trên đã bắt đầu được thực hiện vào tháng 1/2007 và sẽ hoàn tất vào năm 2010.



Viewfinder *(Ảnh: Futura-sciences)*

# 10 champagne

http://www.champagne-ardenne-tech.fr/-spip/article.php3?id_article=2484

## Des robots « canaris » devraient bientôt épauler les pompiers dans leur dangereuse mission

**De l'extinction d'incendies industriels au traitement d'explosions et de leurs suites, la lutte contre le feu est par définition l'un des métiers les plus dangereux au monde. Une équipe de scientifiques vient de s'atteler à deux projets financés par l'UE dans le but de développer un essaim autonome de robots « canaris ».**

Une équipe de scientifiques vient de s'atteler à deux projets financés par l'UE dans le but de développer un essaim autonome de robots « canaris », conçus pour réduire les dangers et accélérer les recherches sur les lieux d'intervention.

Ces explorateurs miniatures seraient la première équipe à pénétrer dans les bâtiments pour recenser les dangers et transmettre ensuite les informations à un « chef d'escadron » humain et au poste de commandement.

Oeuvrant en partenariat avec les services de secours et de lutte anti-incendie du Sud Yorkshire (SYFRS) ainsi que quatre autres organisations européennes, Jacques Penders, maître de recherches à l'université Hallam de Sheffield, encadre ce projet ayant pour but de développer deux mini-robots.

Baptisés « Guardians » et « Viewfinders », ces robots ne mesureront que 16 cm de diamètre et seront équipés d'une technique de communication mobile ainsi que de caméras de télévision/infrarouge (TV/IR), de radars laser (LADAR) et de deux types de capteurs permettant la détection de substances chimiques toxiques et la navigation.

« Les opérations de secours et de lutte anti-incendie recèlent de nombreux dangers, tels que la stabilité structurelle des bâtiments ou la présence de fumée épaisse masquant les voies d'entrée et de sortie aux équipes de secours, ce qui peut fortement les désorienter »,a déclaré J. Penders à CORDIS Nouvelles.

« Les robots Guardian et Viewfinder appuieront la recherche de victimes et les secours en assurant la communication et en aidant l'équipe humaine à évaluer la sûreté de la voie empruntée et la meilleure direction à suivre », a-t-il poursuivi.

Les Guardians travailleraient par vastes équipes d'une trentaine de robots qui recueilleraient chacun des informations sur les substances chimiques toxiques, les flammes et les obstacles artificiels rencontrés en chemin, et retransmettraient le tout aux pompiers grâce aux techniques de communication mobile telles que réseau local sans fil (WLAN), Bluetooth et Zigbee.

« Nous ne sommes pas au cinéma où les secouristes foncent tête baissée pour sauver des blessés. En tant que commandant d'opérations de secours, je dois avant tout veiller à la sécurité de mon équipe si je veux sauver des vies. La mise au point de ces robots va nous permettre de gagner du temps et

de mieux appréhender les dangers qui nous guettent sur les théâtres d'incident. Autant de minutes vitales que nous pourrons consacrer à secourir les victimes », déclare Neil Baugh, chef de station aux SYFRS.
Les robots Viewfinder seront quant à eux équipés de capteurs chimiques et de caméras infrarouges afin de recenser des passages sûrs permettant à l'équipe de se frayer un chemin à travers des sites industriels partiellement détruits. Opérant par équipe de trois, les robots relaieront ces informations vers un poste central humain, via une interface homme-robot spécialement conçue et développée par l'équipe de J. Penders.
« Le terrorisme et notamment les attentats de Londres ont contraint les services de secours et de lutte anti-incendie à se sensibiliser davantage aux dangers liés aux substances chimiques. Mais il leur faudrait assimiler quantité d'informations ; or le métier de pompier est déjà un job à temps plein », déclare J. Penders. « La relation continue que nous entretenons avec les SYFRS va nous permettre de les épauler en partageant nos connaissances avec eux. »
Les deux projets ont démarré en janvier 2007 et devraient s'achever en 2010 avec des modèles de démonstration qui pourraient déboucher sur l'emploi de robots bel et bien réels par les pompiers, dans le cadre d'une profession où ils sont chaque jour amenés à braver la mort.
« Au cours des trois prochaines années, nous allons poursuivre le développement des techniques et les ajuster aux besoins de la lutte anti-incendie. Ces techniques modernes ouvrent des perspectives d'applications domestiques, dans le cadre desquelles les robots pourraient assister des personnes non voyantes et à mobilité réduite », déclare J. Penders.
Pour tout renseignement complémentaire, consulter :
http://www.shu.ac.uk/mmvl/research/guardians/
http://www.shu.ac.uk/mmvl/research/viewfinder/

# 11 Electronicafacil

http://www.electronicafacil.net/Article6443.html

**La lucha contra incendios es una de las profesiones intrínsecamente más peligrosas del mundo, que pasa por la extinción de incendios industriales al combate de explosiones y sus consecuencias.**

Un equipo de científicos trabaja actualmente en dos proyectos financiados por la UE para desarrollar un conjunto de robots detectores de gas, diseñados para reducir los riesgos laborales y los tiempos de búsqueda.

Estos pequeños robots exploradores formarían el primer equipo que entra en edificios para cartografiar los peligros antes de transmitir la información a un jefe de brigada y a una estación de control.

En colaboración con el Servicio de incendios y rescate de South Yorkshire y otras cuatro organizaciones europeas, el Dr. Jacques Penders, investigador jefe en la Universidad de Sheffield Hallam, está dirigiendo los proyectos destinados a desarrollar dos mini robots.

Los robots, a los que se les ha dado el nombre de «Guardians» (guardianes) y «Viewfinders» (visores), medirán sólo 16 cm. de diámetro y contarán con una tecnología de comunicación móvil así como cámaras de televisión/infrarrojas (TV/IR) a bordo, radares láser (LADAR) y dos tipos de sensores para la detección de productos químicos tóxicos y navegación.

«Las operaciones de rescate y extinción de incendios ocultan muchos peligros, como por ejemplo la solidez de la estructura de los edificios, o el espesor del humo ocultando la entrada a los rescatadores o la salida de emergencia, lo que les puede perjudicar gravemente», comunicó el Dr. Penders a Noticias CORDIS.

«Los robots Guardian y Viewfinder ayudarán en la búsqueda y rescate garantizando el vínculo de comunicación y ayudando al equipo humano a estimar la seguridad del camino a tomar y la mejor dirección a seguir», continuó.

Los Guardians trabajarían en equipos grandes de treinta, recogiendo de cada una de sus rutas información sobre productos químicos tóxicos, incendios y obstáculos humanos, que después retransmitirían a los bomberos a través de tecnologías de comunicación móvil, tales cómo la red de área local sin cable (WLAN), Bluetooth y Zigbee.

«No sucede como en las películas, donde los rescatadores pueden abordar inmediatamente una situación y rescatar víctimas. Como persona al mando del incidente tengo que garantizar la seguridad de mi equipo primero para poder ayudar a los demás. La creación de estos robots ayudará a ahorrar tiempo y a hacer una evaluación de seguridad del incidente. Este tiempo será de vital importancia y podremos emplearlo en rescatar víctimas», declara Neil Baugh, Director de la central del Servicio de Incendios y Rescate de South Yorkshire.

Entretanto, los robots Viewfinder serán equipados con sensores químicos y cámaras infrarrojo para cartografiar los pasajes seguros con el fin de que la tripulación acceda a los emplazamientos industriales destruidos parcialmente. En equipos de tres miembros, los robots transmitirán esta información a un punto central de usuario humano a través de una interface especial humano-robot, diseñada y desarrollada por el equipo.


«El terrorismo y particularmente las bombas de Londres han presionado a los servicios de incendios y rescate para que sean más conscientes de los peligros químicos». Pero necesitamos una gran cantidad de información y combatir incendios les ocupa la jornada completa, declara el Dr. Penders. «La relación que estamos desarrollando con el Servicio de Incendios y Rescate de South Yorkshire nos permitirá prestar ayuda compartiendo nuestros conocimientos con ellos».

Ambos proyectos comenzaron en enero de 2007 y está previsto que terminen en 2010 con proyectos piloto que podrían convertirse en robots activos en la vida real para ser utilizados por los bomberos en misiones cotidianas de extremado riesgo.

«En los próximos tres años las técnicas estarán más desarrolladas y se ajustarán mejor a la lucha contra incendios». Estas técnicas avanzadas crean oportunidades que serán transferibles al hogar, donde los robots podrán ayudar a personas ciegas o discapacitadas con dificultades para moverse», afirma el Dr. Penders.

Jueves, 25 Enero, 2007

# 12 Sheffield Chamber of Commerce

http://www.scci.org.uk/content/view/257/138/

## Firefighter's guardian angel is a palm size robot

Monday, 22 January 2007

Rescuing the rescuer will be committed to history as fire and rescue squads join forces with teams of 'canary test' robots, which reduce on-the-job dangers and search times - ultimately saving lives. Industrial fires, explosions and chemical contamination are dangerous circumstances fire and rescue teams face on a daily basis. However small explorer robots, currently being created by Sheffield Hallam University, will soon be the first team to enter buildings to assess for structural soundness, dangerous airborne chemicals and locate small but smoke generating industrial fires. Ordinarily, these instances could not only impede rescue of casualties through time delay, but also endanger the rescuer.

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Jacques said: "In fire and rescue there are many hidden dangers, such as structural soundness of buildings, or when thick smoke is masking the rescuers entrance or escape route, which can severely impair their senses. The Guardian and Viewfinder robots will assist in the search and rescue by ensuring the communication link and helping the human team to estimate the safety of the path they are taking and the best direction to follow."

Time is critical, especially at search and rescue incidents. Initially fire crews might be committed to the incident to lay out guidelines and mark out a route to the fire or casualties, and, just as importantly, a safe route back to the outside.

Unfortunately this basic process can lead to tragedies such as at Gillender Street, London in 1992 when two fire fighters died. The victims became confused in the smoke and lost their exit route. They couldn't be found due to thick smoke when their air ran out. The Guardian robots could help avoid this situation.

The intelligent Guardians work in large teams of thirty, communicating independently to each other and the firefighters; similarly to a mobile phone connection. They distance themselves as beacons, depending on the signal strength, to ensure constant contact. The swarm then gleans information from each of their routes to detect fires, human danger and obstacles which are then reported back to the firefighters.

Neil Baugh, Station Manager from South Yorkshire Fire and Rescue said: "It is not like in the movies where rescuers can go straight into a situation and save casualties. As the incident commander I have to ensure the safety of my team first in order to help others. The creation of these robots will help save time, and assist in the safety assessment of the incident. This is vital time we can then spend in rescuing casualties."

The Viewfinder robots use chemical sensors and video cameras to map safe locations for the crew to access in partially destroyed industrial sites, after events such as explosions. Working in a team of three, this information will be communicated back to a central human user point.

Jacques Penders, who works in the Materials and Engineering Research Institute at Sheffield Hallam, concludes: "Terrorism and particularly the London bombings have put pressure on

fire and rescue services to be more aware of chemical dangers. But there is a lot of information they need to know, and their full-time job is fighting fires! The ongoing relationship between ourselves and South Yorkshire Fire and Rescue Service will mean we can help by sharing our knowledge with them."

Both projects have been highly commended in the European Commissions' evaluation and began in January 2007. Over the next three years the techniques will be further developed and adjusted for firefighting. These advanced techniques create opportunities that will be transferable into the home, where robots may assist handicapped residents.

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# 13 Safety.co

http://www.safety.co.uk/view_news.php?news_id=354

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# 14 Machinebuilding

http://www.machinebuilding.net/n/n0140.htm

## Palm-sized robots designed to assist firefighters

18 January 2007

*Sheffield Hallam University* Company profile visit website

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Industrial fires, explosions and chemical contamination are dangerous circumstances that fire and rescue teams face on a daily basis. However, small explorer robots, which are currently being created by Sheffield Hallam University, will soon be the first into buildings to assess for structural soundness and dangerous airborne chemicals, and to locate small but smoke-generating industrial fires. Ordinarily, these factors could both impede the rescue of casualties through time delay, and also endanger the rescuers.

Jacques Penders, a senior research fellow at Sheffield Hallam, is working in partnership with South Yorkshire Fire and Rescue Service and four other European organisations to develop two mini robots. Named the 'Guardians' and the 'Viewfinders', both robots are just 16cm in diameter.

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*Sheffield Hallam University* Company profile visit website

# 15 Science fiction robots

http://www.sfrobots.com/2007/01/24/canary-test-robots-to-help-firefighters/

## *Canary Test Robots to Help Firefighters*

Robot haters, take note. There are just as many people working on helpful, useful robots, like those that aid rescue workers, as on killer bots.

From putting out industrial fires to dealing with explosions and their aftermath, fire fighting is one of the most inherently dangerous occupations in the world. Now a team of scientists is working on two EU funded projects to develop an autonomous swarm of ‘canary test’ robots designed to reduce on-the-job dangers and search times.

These small explorer robots would be the first team to enter buildings to map the dangers before transmitting the information to a human squad leader and control station.

Working in partnership with the South Yorkshire Fire and Rescue Service and four other European organisations, Dr Jacques Penders, a senior research fellow at Sheffield Hallam University, is leading the projects aimed at developing two mini robots.

Named the ‘Guardians’ and the ‘Viewfinders’, the robots will measure just 16 cm in diameter and feature mobile communication technology as well as onboard television/infrared cameras (TV/IR), Laser Radars (LADAR) and two types of sensors for the detection of toxic chemicals and navigation.

The little guys just want to help out their big clunky humanoid friends. Remember, kids, technology doesn’t create killer robots. People create killer robots.

# 16 Scenta

http://www.scenta.co.uk/careers/general/electrical_&_electronic_engineering.cfm?cit_id=1473670&FAArea1=widgets.content_view_1

## Robots blaze a trail

Source: **The Engineer**

Two firefighters died when they were engulfed by smoke and lost their exit route while attending a blaze in London's East End in 1992. The smoke was so thick it was impossible to find them and they died when their air ran out.

Now an EU-funded project to develop swarms of palm-sized intelligent robots could help protect firefighters in dangerous, smoke-filled buildings and prevent this happening again.

Over three years the researchers aim to develop two types of rescue robot — the Viewfinder and the Guardian.

A team of 16cm Viewfinder explorer robots would be the first to enter a building in the event of a fire and would assess the air for dangerous chemicals, structural soundness and locate the heart of the fire.

### Remote operation

Jacques Penders, a senior research fellow at Sheffield Hallam University's materials and engineering research institute, is leading the project. He said the Viewfinders would work in a team of three and be operated remotely by a firefighter from a safe distance.

'Fire and rescue services want a means to access premises before they send in people,' he said. 'In the aftermath of an explosion you need to know it's safe.'

Once inside the building the Viewfinder would be able to operate with a degree of autonomy to scan the building's interior for possible danger. Equipped with a large array of chemical sensors it would also carry a range of cameras, including normal light and infrared imaging.

The robots would collect information about their surroundings then send it to the manned base station outside. The information would be processed on a screen and overlayed on a map of the area, allowing firefighters to plan a safe route.

After the first wave of Viewfinders, the Guardians would be sent in. They would operate in larger teams of about 30 individual robots and act as a wireless communications network. They will communicate between themselves and any firefighters in the building and build up an ad-hoc mobile network. They would distance themselves — like beacons — throughout the

building, depending on the strength of the signal, to ensure constant contact.

'As they carry their own base station it means they can be used anywhere. We are particularly thinking of warehouses filled with smoke where you will expect a lot of metal, so normal wireless communications will not work,' said Penders.

As part of the research project the Guardians will be developed in two sizes, the wheeled, 16cm version and a 40x60cm prototype that moves on tracks.

Penders said firefighting teams would probably use a combination of the two sizes. He stressed that the robots are not designed to be used in rubble-strewn environments, but would be used to counter the effects of smoke.

**Sense of touch**

Once human firefighters enter the building it is intended that they will be guided along a safe path by the Guardians. The team is unsure what form the human-robot interface will take, but it likely that it will rely on the firefighter's sense of touch.

'One firefighter would be surrounded by 10-15 of these robots,' said Penders. 'Remember that visual and audio communication is hampered by breathing apparatus and the smoke so we are looking at a tactile interface of some sort attached to his body, so the robots could make clear to the firefighter where he is and which way he should move.'

The project is a pan-European effort. The small Guardians will be made by Swiss robot manufacturer K-Team, while Spanish robotics experts Robotnik will develop the larger ones. The Viewfinders will come from the Polish institute for robotics.

Penders' team is working alongside the South Yorkshire Fire and Rescue Service to validate their findings and test early prototypes.

He admitted that the project is extremely ambitious. 'It's high-risk research, but the rewards could be huge,' he said.

# 17 UKPRwire

http://www.ukprwire.com/Detailed/Technology/Firefighter_s_guardian_angel_is_a_palm_size_robot_4625.shtml

## Firefighter's guardian angel is a palm size robot

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Jacques said: "In fire and rescue there are many hidden dangers, such as structural soundness of buildings, or when thick smoke is masking the rescuers entrance or escape route, which can severely impair their senses. The Guardian and Viewfinder robots will assist in the search and rescue by ensuring the communication link and helping the human team to estimate the safety of the path they are taking and the best direction to follow."

Time is critical, especially at search and rescue incidents. Initially fire crews might be committed to the incident to lay out guidelines and mark out a route to the fire or casualties, and, just as importantly, a safe route back to the outside.

Unfortunately this basic process can lead to tragedies such as at Gillender Street, London in 1992 when two fire fighters died. The victims became confused in the smoke and lost their exit route. They couldn't be found due to thick smoke when their air ran out. The Guardian robots could help avoid this situation.

The intelligent Guardians work in large teams of thirty, communicating independently to each other and the firefighters; similarly to a mobile phone connection. They distance themselves as beacons, depending on the signal strength, to ensure constant contact. The swarm then gleans information from each of their routes to detect fires, human danger and obstacles which are then reported back to the firefighters.

Neil Baugh, Station Manager from South Yorkshire Fire and Rescue said: "It is not like in the movies where rescuers can go straight into a situation and save

casualties. As the incident commander I have to ensure the safety of my team first in order to help others. The creation of these robots will help save time, and assist in the safety assessment of the incident. This is vital time we can then spend in rescuing casualties."

The Viewfinder robots use chemical sensors and video cameras to map safe locations for the crew to access in partially destroyed industrial sites, after events such as explosions. Working in a team of three, this information will be communicated back to a central human user point.

Jacques Penders, who works in the Materials and Engineering Research Institute at Sheffield Hallam, concludes: "Terrorism and particularly the London bombings have put pressure on fire and rescue services to be more aware of chemical dangers. But there is a lot of information they need to know, and their full-time job is fighting fires! The ongoing relationship between ourselves and South Yorkshire Fire and Rescue Service will mean we can help by sharing our knowledge with them."

Both projects have been highly commended in the European Commissions' evaluation and began in January 2007. Over the next three years the techniques will be further developed and adjusted for firefighting. These advanced techniques create opportunities that will be transferable into the home, where robots may assist handicapped residents.

Other international partners include Belgium's Royal Military Academy and Space Applications Services. Italy's Galileo Avionica, Universita Degli Studi di Roma and Intelligence for Environment and Security. Poland's Przemyslowy Instytut Automatyki I Pomiarow (Polish institute for robotics) and Greece Eidikos Logariasmos Erevnon Dimokriteiou Panepistimiou Thrakis (University of Thrace); Heinz Nixdorf Institute Padeborn (Germany); ETU University Ankara, Turkey; University JAUME 1 Castellion (Spain); K-Team (Swiss robot manufacturer), Robotnik (Spanish Robot manufacturer) University of Coimbra, Portugal.

# 18 innovations-report.de

http://www.innovations-report.de/html/berichte/informationstechnologie/bericht-77126.html

## Firefighter's guardian angel is a palm size robot

*nächste Meldung*

**18.01.2007**

***Rescuing the rescuer will be committed to history as fire and rescue squads join forces with teams of 'canary test' robots, which reduce on-the-job dangers and search times - ultimately saving lives.***



Industrial fires, explosions and chemical contamination are dangerous circumstances fire and rescue teams face on a daily basis. However small explorer robots, currently being created by Sheffield Hallam University, will soon be the first team to enter buildings to assess for structural soundness, dangerous airborne chemicals and locate small but smoke generating industrial fires. Ordinarily, these instances could not only impede rescue of casualties through time delay, but also endanger the rescuer.

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# 19 BBC Radio Sheffield

# 20 National Fire Protection Association

# 21 z.un The Netherlands

# 22 The Sheffield Star

http://www.sheffieldtoday.net/ViewArticle.aspx?SectionID=58&ArticleID=1988821

## Explorer robots will identify fire dangers


Robotic guide: Station commander Neil Baugh with researcher Jacques Penders of Sheffield Hallam University

By Polly Rippon

FUTURISTIC robots which can recce blazing buildings to check safety conditions before firefighters are sent in are being developed by scientists at a Sheffield university.

The explorer robots being built at Sheffield Hallam University will be used to cut on-the-job dangers and search times for fire and rescue crews.
They will be able to check buildings for structural soundness and dangerous airborne chemicals, and locate small but smoke-generating industrial fires.
Neil Baugh, station manager from South Yorkshire Fire and Rescue, said: "It is not like in the movies where rescuers can go straight into a situation and save casualties.

"As the incident commander I have to ensure the safety of my team first in order to help others. The creation of these robots will help save time, and assist in the safety assessment of the incident. This is vital time we can then spend in rescuing casualties."
In the old days miners used to take canaries down pits as an early-warning system to test for poisonous fumes.
Jacques Penders, a senior research fellow at the university, is working with the fire and rescue service and four other European organisations, to develop two mini "canary test" robots.
The tiny machines, called "Guardians" and "Viewfinders" are just 16cm in diameter.
Mr Penders said: "In fire and rescue there are many hidden dangers, such as structural soundness of buildings, or when thick smoke is masking the rescuers' entrance or escape route, which can severely impair their senses.
"The Guardian and Viewfinder robots will assist in the search and rescue by ensuring the communication link and helping the human team to estimate the safety of the path they are taking and the best direction to follow."

Time is critical during search and rescue incidents, but on arrival fire crews often spend valuable minutes working out a route to the fire or casualties, and a safe route back.

The Guardian robots, which work in teams of 30, can communicate with each other and with firefighters. They work out the distance between themselves and the fire to

locate the seat of the blaze and can also report back any potential dangers or obstacles. Viewfinders use chemical sensors and video cameras to map safe entry points for crews in partially destroyed industrial sites, after events such as explosions. The robots will be developed over the next three years and could eventually be adapted to assist physically disabled people in their homes.

Last Updated: 24 January 2007

# 23 Electronics weekly

# 24 Sheffield Telegraph

# 25 Futura

http://www.futura-sciences.com/news-robots-epauler-pompiers-leurs-missions-dangereuses_10302.php


**HIGH-TECH**

## Des robots pour épauler les pompiers dans leurs missions dangereuses

**Source : CORDIS Nouvelles**, le 31/01/2007 à 10h02

**De l'extinction d'incendies industriels au traitement d'explosions et de leurs suites, la lutte contre le feu est par définition l'un des métiers les plus dangereux au monde. Une équipe de scientifiques vient de s'atteler à deux projets financés par l'UE dans le but de développer un essaim autonome de robots «canaris», conçus pour réduire les dangers et accélérer les recherches sur les lieux d'intervention.**

Ces explorateurs miniatures seraient la première équipe à pénétrer dans les bâtiments pour recenser les dangers et transmettre ensuite les informations à un « chef d'escadron » humain et au poste de commandement.

Oeuvrant en partenariat avec les services de secours et de lutte anti-incendie du Sud Yorkshire (SYFRS) ainsi que quatre autres organisations européennes, Jacques Penders, maître de recherches à l'université Hallam de Sheffield, encadre ce projet ayant pour but de développer deux mini-robots.

Baptisés « Guardians » et « Viewfinders », ces robots ne mesureront que 16 cm de diamètre et seront équipés d'une technique de communication mobile ainsi que de caméras de télévision/infrarouge (TV/IR), de radars laser (LADAR) et de deux types de capteurs permettant la détection de substances chimiques toxiques et la navigation.

« Les opérations de secours et de lutte anti-incendie recèlent de nombreux dangers, tels que la stabilité structurelle des bâtiments ou la présence de fumée épaisse masquant les voies d'entrée et de sortie aux équipes de secours, ce qui peut fortement les désorienter »,a déclaré J. Penders à CORDIS Nouvelles.

« Les robots Guardian et Viewfinder appuieront la recherche de victimes et les secours en assurant la communication et en aidant l'équipe humaine à évaluer la sûreté de la voie empruntée et la meilleure direction à suivre », a-t-il poursuivi.

Les Guardians travailleraient par vastes équipes d'une trentaine de robots qui recueilleraient chacun des informations sur les substances chimiques toxiques, les flammes et les obstacles artificiels rencontrés en chemin, et retransmettraient le tout aux pompiers grâce aux techniques de communication mobile telles que réseau local sans fil (WLAN), Bluetooth et Zigbee.

« Nous ne sommes pas au cinéma où les secouristes foncent tête baissée pour sauver des blessés. En tant que commandant d'opérations de secours, je dois avant tout veiller à la sécurité de mon équipe si je veux sauver des vies. La mise au point de ces robots va nous permettre de gagner du temps et de mieux appréhender les dangers qui nous guettent sur les théâtres d'incident. Autant de minutes vitales que nous pourrons consacrer à secourir les victimes », déclare Neil Baugh, chef de station aux SYFRS.

Les robots Viewfinder seront quant à eux équipés de capteurs chimiques et de caméras infrarouges afin de recenser des passages sûrs permettant à l'équipe de se frayer un chemin à travers des sites industriels partiellement détruits. Opérant par équipe de trois, les robots relaieront ces informations vers un poste central humain, via une interface homme-robot spécialement conçue et développée par l'équipe de J. Penders.

« Le terrorisme et notamment les attentats de Londres ont contraint les services de secours et de lutte anti-incendie à se sensibiliser davantage aux dangers liés aux substances chimiques. Mais il leur faudrait assimiler quantité d'informations; or le métier de pompier est déjà un job à temps plein », déclare J. Penders. « La relation continue que nous entretenons avec les SYFRS va nous permettre de les épauler en partageant nos connaissances avec eux. »

Les deux projets ont démarré en janvier 2007 et devraient s'achever en 2010 avec des modèles de démonstration qui pourraient déboucher sur l'emploi de robots bel et bien réels par les pompiers, dans le cadre d'une profession où ils sont chaque jour amenés à braver la mort.

« Au cours des trois prochaines années, nous allons poursuivre le développement des techniques et les ajuster aux besoins de la lutte anti-incendie. Ces techniques modernes ouvrent des perspectives d'applications domestiques, dans le cadre desquelles les robots pourraient assister des personnes non voyantes et à mobilité réduite détection, produit chimique», déclare J. Penders.

Commenter cette news ou lire les commentaires »

**Viewfinder**
**Crédits : Sheffield Hallam University**

# 26 First.aster.it

http://first.aster.it/news/show_news.php?ID=14976

## Robot da utilizzare come canarini per aiutare i vigili del fuoco nelle loro rischiose missioni

Spegnere gli incendi è senza dubbio una delle attività più pericolose del mondo, sia nel caso di incendi industriali sia dovendo affrontare esplosioni e relative conseguenze.
Un'équipe di scienziati è attualmente impegnata su due progetti finanziati dall'Unione europea tesi allo sviluppo di un gruppo autonomo di robot, destinati a essere impiegati come venivano utilizzati i canarini nelle miniere, per ridurre i pericoli in loco e i tempi di ricerca.
Questi robot esploratori di piccole dimensioni saranno i primi soccorritori a entrare negli edifici al fine di tracciare una mappa dei pericoli prima di trasmettere le informazioni al capo di una squadra di uomini e a una stazione di controllo.
Il dottor Jacques Penders, ricercatore senior presso la Sheffield Hallam University, è alla guida dei progetti finalizzati allo sviluppo di due minirobot, al cui studio collaborano il South Yorkshire Fire and Rescue Service e quattro altre organizzazioni europee.
I robot, i cui nomi saranno «Guardian» e «Viewfinder», avranno un diametro di appena 16 cm e saranno dotati di dispositivi di comunicazione mobile, televisione e telecamere a infrarossi incorporate (TV/IR), laser radar (LADAR), nonché di due tipi di sensori per il rilevamento di sostanze chimiche tossiche e per la navigazione.
«Le operazioni di soccorso e antincendio celano numerosi pericoli, legati ad esempio alla solidità strutturale degli edifici o al fumo denso che in alcuni casi nasconde la via di entrata o di fuga per i soccorritori, il che può pregiudicare gravemente i loro sensi», ha dichiarato Penders al Notiziario CORDIS.
«I robot Guardian e Viewfinder forniranno assistenza nelle operazioni di ricerca e soccorso garantendo la comunicazione e aiutando la squadra di uomini a valutare il livello di sicurezza del percorso da coprire e la direzione migliore da seguire», ha aggiunto.
I Guardian lavoreranno in grandi équipe di trenta unità, raccogliendo informazioni da ognuno dei tragitti percorsi su sostanze chimiche tossiche, presenza di fiamme e ostacoli umani e trasmettendole poi ai vigili del fuoco grazie a tecnologie mobili quali una rete locale senza fili (Wireless Local Area Network, WLAN), Bluetooth e Zigbee.
«Non è come nei film, dove i soccorritori possono buttarsi a capofitto in una situazione e trarre in salvo i malcapitati. In quanto responsabile dell'emergenza, devo innanzi tutto garantire la sicurezza della mia squadra per poter aiutare gli altri. La creazione di questi robot consentirà di risparmiare tempo e offrirà un valido contributo nella valutazione della sicurezza nel caso specifico. È un risparmio di tempo di importanza fondamentale perché può consentirci di soccorrere le vittime», spiega Neil Baugh, responsabile di stazione del South Yorkshire Fire and Rescue.
Da parte loro i robot Viewfinder saranno dotati di sensori chimici e telecamere a infrarossi al fine di individuare i passaggi sicuri affinché le squadre possano accedere a siti industriali parzialmente distrutti.
I robot, organizzati in gruppi da tre, trasmetteranno le informazioni a un'unità centrale costituita da utenti umani attraverso un'interfaccia uomo-robot progettata specificamente per questo scopo e sviluppata dall'équipe.
«Il terrorismo e in particolare le bombe fatte esplodere a Londra hanno convinto i servizi antincendio e di soccorso dell'urgente necessità di una conoscenza più approfondita dei pericoli chimici. Ma hanno bisogno di acquisire una quantità incredibile di informazioni e il loro lavoro a tempo pieno è lottare contro gli incendi!», afferma Penders. «La collaborazione in corso tra noi e il South Yorkshire Fire and Rescue Service ci permetterà di apportare un aiuto condividendo con loro le nostre conoscenze».
I due progetti sono stati avviati nel gennaio 2007 e dovrebbero concludersi nel 2010 con modelli pilota che dovrebbero diventare robot operanti nella vita reale, utilizzati dai vigili del fuoco nelle loro mansioni quotidiane in cui sfidano la morte.
«Nei prossimi tre anni le tecniche verranno ulteriormente sviluppate e adeguate per le operazioni antincendio. Queste tecniche avanzate creano opportunità che si potranno applicare nelle abitazioni, dove i robot potranno assistere persone non vedenti o con mobilità ridotta», afferma Penders.
Fonte: Intervista del Notiziario CORDIS al dottor Penders, coordinatore dei progetti Guardian e Viewfinder, e fonti web

| | |
|---|---|
| Quadro di finanziamento | 6FP-IST - Tecnologie della società dell'informazione: priorità tematica 2 nell'ambito del gruppo di attività 'Integrare e rafforzare lo Spazio europeo della ricerca' del VI Programma Quadro di RST |
| Links | Ulteriori dettagli su Guardians<br>Ulteriori dettagli su Viewfinder |

# 27 belt.es

http://www.belt.es/noticiasmdb/HOME2_noticias.asp?id=2702

## Robots detectores de gas ayudarán a los bomberos en misiones cotidianas de extremado riesgo

La lucha contra incendios es una de las profesiones intrínsecamente más peligrosas del mundo, que pasa por la extinción de incendios industriales al combate de explosiones y sus consecuencias

Un equipo de científicos trabaja actualmente en dos proyectos financiados por la UE para desarrollar un conjunto de robots detectores de gas, diseñados para reducir los riesgos laborales y los tiempos de búsqueda.


Estos pequeños robots exploradores formarían el primer equipo que entra en edificios para cartografiar los peligros antes de transmitir la información a un jefe de brigada y a una estación de control.

En colaboración con el Servicio de incendios y rescate de South Yorkshire y otras cuatro organizaciones europeas, el Dr. Jacques Penders, investigador jefe en la Universidad de Sheffield Hallam, está dirigiendo los proyectos destinados a desarrollar dos mini robots.

Los robots, a los que se les ha dado el nombre de «Guardians» (guardianes) y «Viewfinders» (visores), medirán sólo 16 cm. de diámetro y contarán con una tecnología de comunicación móvil así como cámaras de televisión/infrarrojas (TV/IR) a bordo, radares láser (LADAR) y dos tipos de sensores para la detección de productos químicos tóxicos y navegación.

«Las operaciones de rescate y extinción de incendios ocultan muchos peligros, como por ejemplo la solidez de la estructura de los edificios, o el espesor del humo ocultando la entrada a los rescatadores o la salida de emergencia, lo que les puede perjudicar gravemente», comunicó el Dr. Penders a Noticias CORDIS.

«Los robots Guardian y Viewfinder ayudarán en la búsqueda y rescate garantizando el vínculo de comunicación y ayudando al equipo humano a estimar la seguridad del camino a tomar y la mejor dirección a seguir», continuó.

Los Guardians trabajarían en equipos grandes de treinta, recogiendo de cada una de sus rutas información sobre productos químicos tóxicos, incendios y obstáculos humanos, que después retransmitirían a los bomberos a través de tecnologías de comunicación móvil, tales cómo la red de área local sin cable (WLAN), Bluetooth y Zigbee.

«No sucede como en las películas, donde los rescatadores pueden abordar inmediatamente una situación y rescatar víctimas. Como persona al mando del incidente tengo que garantizar la seguridad de mi equipo primero para poder ayudar a los demás. La creación de estos robots ayudará a ahorrar tiempo y a hacer una evaluación de seguridad del incidente. Este tiempo será de vital importancia y podremos emplearlo en rescatar víctimas», declara Neil Baugh, Director de la central del Servicio de Incendios y Rescate de South Yorkshire.

Entretanto, los robots Viewfinder serán equipados con sensores químicos y cámaras infrarrojo para cartografiar los pasajes seguros con el fin de que la tripulación acceda a los emplazamientos industriales destruidos parcialmente. En equipos de tres miembros, los robots transmitirán esta información a un punto central de usuario humano a través de una interface especial humano-robot, diseñada y desarrollada por el equipo.

«El terrorismo y particularmente las bombas de Londres han presionado a los servicios de incendios y rescate para que sean más conscientes de los peligros químicos». Pero necesitamos una gran cantidad de información y combatir incendios les ocupa la jornada completa, declara el Dr. Penders. «La relación que estamos desarrollando con el Servicio de Incendios y Rescate de South Yorkshire nos permitirá prestar ayuda compartiendo nuestros conocimientos con ellos».

Ambos proyectos comenzaron en enero de 2007 y está previsto que terminen en 2010 con proyectos piloto que podrían convertirse en robots activos en la vida real para ser utilizados por los bomberos en misiones cotidianas de extremado riesgo.

«En los próximos tres años las técnicas estarán más desarrolladas y se ajustarán mejor a la lucha contra incendios». Estas técnicas avanzadas crean oportunidades que serán transferibles al hogar, donde los robots podrán ayudar a personas ciegas o discapacitadas con dificultades para moverse», afirma el Dr. Penders.

Fuente: www.cordis.europa.eu
24.01.07

# 28 Galicia

http://www.galicia-hoxe.com/indexSuplementos.php?idMenu=19&idNoticia=129472

## Os robots, bos compañeiros na loita contra os incendios

***31.01.2007 Científicos europeos traballan no deseño de exploradores e detectores de gas que poderían ser moi útiles para apoiar os bombeiros na súa loita contra os lumes máis perigosos achegándolles información detallada e en tempo real da zona da desfeita***

**E.D. . SANTIAGO**

O equipo de investigadores ofrece máis información sobre a súa iniciativa en www.shu.ac.uk/mmvl/research/guardians e www.shu.ac.uk/mmvl/research/viewfinder

A loita contra os incendios é cada vez máis complexa porque non só se trata de apagar lumes forestais e domésticos, senón que o persoal ten que estar moi preparado para enfrontarse ós incendios industriais e ós xerados por explosións. Cada substancia química reacciona de forma diferente ás demais en presenza de altas temperaturas e por iso é preciso contar coa formación adecuada para actuar e sobre todo con información precisa sobre o terreo para saber sobre que puntos resultaría máis eficaz a extinción para o control do lume e para evitar a súa propagación.

As investigacións en materia de extinción son por iso cada vez máis necesarias. Entre as que se están a desenvolver na actualidade resulta ben interesante a dun equipo de científicos que traballa en dous proxectos financiados pola Unión Europea para desenvolver robots detectores de gas que permitan reducir os riscos ós que se enfrontan os bombeiros e os tempos de busca de persoas en áreas afectadas polo lume.

Estes aparellos funcionarían como exploradores acompañando os equipos que entran en edificios ou complexos industriais para tentar facer un mapa de riscos sobre o terreo e transmitirlles eses datos ó resto do persoal de loita contra os lumes.

En colaboración co Servizo de incendios e rescate de South Yorkshire para as probas prácticas e outras organizacións europeas para desenvolver distintas partes dos proxectos, Jacques Penders, investigador xefe na Universidade de Sheffield Hallam, está a dirixir as tareefas de deseño de dous pequenos robots para destinalos a esas funcións. Na iniciativa participa un equipo español do Laboratorio de Intelixencia Robótica da Universidade Jaume I de Castellon, así como científicos alemáns belgas, italianos, polacos, portugueses e turcos. Entre os socios industriais

hai tamén presenza española, da empresa Robotnik Automation, así como de compañías de Bélxica, Suíza e Italia.

Os dous modelos de robots foron chamados Guardian e Viewfinder. De acordo coa información do proxecto que se fixo pública ata o de agora, medirán nada máis dezaseis centímetros de diámetro e contarán co tecnoloxía de comunicación móbil, cámaras de televisión que lles permitirán gravar imaxes empregando luz infravermella a bordo, radares láser e sensores de navegación e para a detección de produtos químicos tóxicos.

Jacques Penders explicoulle ó Servizo de información comunitario Cordis que "as operacións de rescate e extinción de incendios ocultan moitos perigos, como por exemplo a solidez da estrutura dos edificios, ou o grosor do fume, ocultándolles a entrada ós rescatadores ou a saída de emerxencia, o que os pode prexudicar gravemente".

Para axudalos estarían os robots, garantindo "o vínculo de comunicación e axudando o equipo humano a estimar a seguridade do camiño a tomar e a mellor dirección a seguir". Os do modelo Guardian foron deseñados para traballar en equipos grandes de ata trinta dispositivos, recollendo datos sobre produtos químicos tóxicos, incendios e obstáculos humanos, que lles enviarían ós bombeiros a través de tecnoloxías de comunicación móbil, tales como a da rede de área local sen fíos (WLAN), Bluetooth e Zigbee.

O director da central do Servizo de incendios e rescate de South Yorkshire, Neil Baugh, lembrou en declaracións a Cordis que actuar contra os lumes non é algo que se faga "como nas películas, onde os rescatadores poden abordar inmediatamente unha situación e rescatar vítimas. Como persoa ó mando do incidente teño que garantir a seguridade do meu equipo primeiro para poder axudar os demais. A creación destes robots axudará a aforrar tempo e a facer unha avaliación de seguridade do incidente. Este tempo será de vital importancia e poderemos empregalo en rescatar vítimas".

Entrementres, os robots Viewfinder serán equipados con sensores químicos e cámaras con tecnoloxía de infravermellos para cartografar a zona de actuación e escoller rutas seguras para que o persoal humano poida facer inspeccións ou rescates. En equipos de tres unidades, os robots transmitirían igualmente esta información ó persoal de bombeiros.

Os proxectos de desenvolvemento dos dous tipos de robots comezaron este mesmo mes e está previsto que rematen no ano 2010 coa presentación de proxectos piloto que poderían levar á fabricación de robots útiles para ser utilizados polos bombeiros. As investigacións sobre como os robots poden axudar eficazmente as persoas en distintos ámbitos están entre as máis punteiras das que se desenvolven hoxe en día en Europa, polo que as institución de investigación e as empresas da UE teñen neste eido grandes oportunidades de futuro.

# 29 Korean

http://www.gtp.or.kr/antp/new_tech/view.jsp?cPage=2&gubun=002&menu=71&no=117910

소방구조대원을 돕는 손바닥 크기의 로봇

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국가:영국/분야:기계

산업체 화재, 폭발, 화학 오염 등은 소방 구조대가 매일 마주치는 위험한 상황이다. 그러나 현재 영국의 셰필드 할램 대학교(Sheffield Hallam University)에 의해 만들어지고 있는 소형 탐사 로봇들은 조만간 건물의 구조적 건전함을 평가하고, 위험한 대기 화학물질을 탐지하며, 연기가 발생하는 산업체 화재의 발생지점을 알아내기 위해 건물 내부로 들어가는 최초의 팀이 될 것이다. 보통 이러한 상황은 시간 지연으로 사상자의 구조를 방해할 뿐만 아니라 소방구조대원들을 위태롭게 한다.

셰필드 할램 대학교의 선임 연구원인 자끄 펜더스(Jacques Penders)는 사우스 요크셔 소방구조대(South Yorkshire Fire and Rescue Service)와 다른 4개의 유럽 조직과 공동으로 2종의 소형 로봇을 개발하고 있다. 가디언(Guardians)과 뷰파인더(Viewfinder)라 명명된 이 두 로봇은 직경이 단지 16cm에 불과하다.

소방구조 활동에서 두꺼운 연기가 출입구나 탈출 경로를 가리는 경우 소방구조대원의 감각이 심각하게 악화될 수 있고, 건물의 구조적 건전성과 같은 많은 숨겨진 위협이 존재한다. 가디언과 뷰파인더 로봇은 통신 연결을 확보하고, 경로의 안전성을 평가하며, 따라가야 할 최선의 방향을 알려주어 소방구조대원을 돕는다.

특히 탐사 및 구조 사건의 경우 시간이 매우 중요하다. 초기에 소방대원은 안내선(guideline)을 만들고, 화재나 사상자가 있는 곳에 대한 경로와 더불어 더욱 중요한 외부로 빠져나가는 안전한 경로를 표시하기 위해 전념한다.

불행하게도 이러한 기본 과정은 1992년 영국 런던의 길렌더 스트리트(Gillender Street)에서 2명의 소방관이 순직한 것과 같은 비극을 야기할 수 있다. 이 두 소방관은 연기로 인해 당황하게 되었고, 출구 경로를 잃었다. 이들은 공기가 떨어졌을 때 두꺼운 연기로 인해 발견될 수 없었다. 가디언 로봇은 이러한 상황을 피하는데 도움이 될 수 있다.

지능적인 가디언 로봇은 30대 정도로 대규모 팀을 이루어 각각 독립적으로 활동하면서 상호간에 통신을 하고, 소방구조대원들과도 통신을 수행한다.

가디언 로봇은 신호 강도에 의존하는 무선표시인 비콘(beacon)을 이용하여 지속적인 접촉을 확보하고 서로의 간격을 유지한다. 그리고 이 다중 로봇군은 각각의 경로에서 정보를 수집하여 화재, 인간의 위험, 장애물 등을 탐지하고 이를 소방구조대원에게 보고한다.

“영화에서와 같이 소방구조대원이 직접 현장에서 가서 사상자를 구하지 않는다. 사건 지휘자인 나는 다른 사람을 돕기 위해 우선 우리 팀의 안전을 확보해야 한다. 이러한 가디언 로봇은 시간을 절약하고, 사고의 안전성을 평가하는데 도움이 될 것이다. 이 때는 매우 중요한 시간이며, 이후에 피해자들을 구조할 수 있다”고 사우스 요크셔 소방구조대 대장인 네일 바우(Neil Baugh)는 전했다.

한편, 뷰파인더 로봇은 특히 폭발과 같은 상황이 발생한 후에 부분적으로 파괴된 산업시설에서 소방구조대원이 접근하도록 안전한 경로에 대한 지도를 만들기 위해 화학 센서와 비디오 카메라를 사용한다. 이 로봇은 3대가 팀을 이루어 작동하며, 수집된 정보는 소방구조대원에게 다시 전달될 것이다.

런던 폭탄테러와 같은 테러리즘은 소방구조 활동이 좀더 화학적 위협에 대비해야 함을 인식하도록 했다. 소방구조활동으로 바쁜 소방구조대원들이 알아야 할 정보가 많아졌다. 셰필드 할램 대학교는 자신들이 가진 지식을 활용하여 사우스 요크셔 소방구조대를 돕고 있다.

이 두 프로젝트는 유럽연합 집행위원회(European Commission)의 평가에서 격찬을 받았으며, 2007년 1월부터 시작됐다. 향후 3년 동안 이 기술을 더욱 발전시키고, 소방활동을 위해 조정될 것이다. 이러한 진보된 기술은 로봇이 장애인이나 노인을 돕는 가정으로 이전될 기회를 만들고 있다.

*Fire fighting: Jacques Penders with mini-robot prototype*

이미지1

# 30 Cordis

http://cordis.europa.eu/fetch?CALLER=EN_NEWS&ACTION=D&SESSION=&RCN=27004

## 'Canary test' robots to help fire fighters in daily death defying duties

[Date: 2007-01-24]


From putting out industrial fires to dealing with explosions and their aftermath, fire fighting is one of the most inherently dangerous occupations in the world.

Now a team of scientists is working on two EU funded projects to develop an autonomous swarm of 'canary test' robots designed to reduce on-the-job dangers and search times.

These small explorer robots would be the first team to enter buildings to map the dangers before transmitting the information to a human squad leader and control station.

Working in partnership with the South Yorkshire Fire and Rescue Service and four other European organisations, Dr Jacques Penders, a senior research fellow at Sheffield Hallam University, is leading the projects aimed at developing two mini robots.

Named the 'Guardians' and the 'Viewfinders', the robots will measure just 16 cm in diameter and feature mobile communication technology as well as onboard television/infrared cameras (TV/IR), Laser Radars (LADAR) and two types of sensors for the detection of toxic chemicals and navigation.

'There are many hidden dangers in fire and rescue operations, such as structural soundness of buildings, or when thick smoke is masking the rescuers entrance or escape route, which can severely impair their senses,' Dr Penders told CORDIS News.

'The Guardian and Viewfinder robots will assist in the search and rescue by ensuring the communication link and helping the human team to estimate the safety of the path they are taking and the best direction to follow' he continued.

The Guardians would work in large teams of thirty, collecting information from each of their routes on toxic chemicals, fires and human obstacles, which they would then transmit back to the fire fighters through mobile communication technologies such as Wireless Local Area Network (WLAN); Bluetooth and Zigbee.

'It is not like in the movies where rescuers can go straight into a situation and save casualties. As the incident commander I have to ensure the safety of my team first in order to help others. The creation of these robots will help save time, and assist in the safety assessment of the incident. This is vital time we can then spend in rescuing casualties,' says Neil Baugh, Station Manager from South Yorkshire Fire and Rescue.

Meanwhile the Viewfinder robots will be equipped with chemical sensors and infrared cameras to map safe passages for the crew to access in partially destroyed industrial sites. Working in a team of three, the robots will relay this information to a central human user point via a specially designed human-robot interface designed and developed by the team.

'Terrorism and particularly the London bombings have put pressure on fire and rescue services to be more aware of chemical dangers. But there is a lot of information they need to know, and their full-time job is fighting fires!,' says Dr Penders. 'The ongoing relationship between ourselves and South Yorkshire Fire and Rescue Service will mean we can help by sharing our knowledge with them.'

The two projects began in January 2007 and are expected to finish in 2010 with proofs-of-concept which could be turned into real life working robots used by fire fighters in their daily death defying duties.

'Over the next three years the techniques will be further developed and adjusted to fire fighting. These advanced techniques create opportunities that will be transferable into the home, where robots may assist blind or mobility impaired people,' says Dr Penders.

For more information, please visit:
http://www.shu.ac.uk/mmvl/research/guardians/
http://www.shu.ac.uk/mmvl/research/viewfinder/

**Category:** Projects
**Data Source Provider:** CORDIS News interview with Guardian and Viewfinder project coordinator Dr Penders and web sources
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