

Carnegie Mellon University researchers have developed a system for robots to better understand their environment by recognising the context of different objects.

A robot travelling from point A to point B is more efficient if it understands that point A is the sitting room sofa and point B is a refrigerator, even if it is in an unfamiliar place. This is the basis for the “semantic” navigation system which has been dubbed SemExp.

The system was developed, using machine learning to train a robot to recognise objects, such as understanding the difference between a kitchen table and an end table with knowledge about where in a home such objects are likely to be found.

This enables the system to think strategically about how to search for something, said researcher Devendra Chaplot. “Common sense says that if you’re looking for a refrigerator, you’d better go to the kitchen,” Chaplot said. Classical robotic navigation systems, by contrast, explore a space by building a map showing obstacles. The robot eventually gets to where it needs to go, but the route can be circuitous.

Previous attempts to use machine learning to train semantic navigation systems have been hampered because they tend to memorise objects and their locations in specific environments. Not only are these environments complex, but the system often has difficulty generalising what it has learned to different environments.

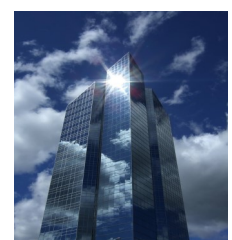
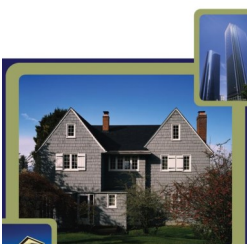
Chaplot sidestepped that problem by making SemExp a modular system with semantic insights allowing it to determine the best places to look for a specific object: “Once you decide where to go, you can just use classical planning to get you there,” he said.

This modular approach turns out to be efficient in several ways. The learning process can concentrate on relationships between objects and room layouts, rather than also learning route planning. The semantic reasoning determines the most efficient search strategy. Finally, classical navigation planning gets the robot where it needs to go as quickly as possible.

Semantic navigation ultimately will make it easier for people to interact with robots, enabling them to simply tell the robot to fetch an item in a particular place, or give it directions such as “go to the second door on the left”.

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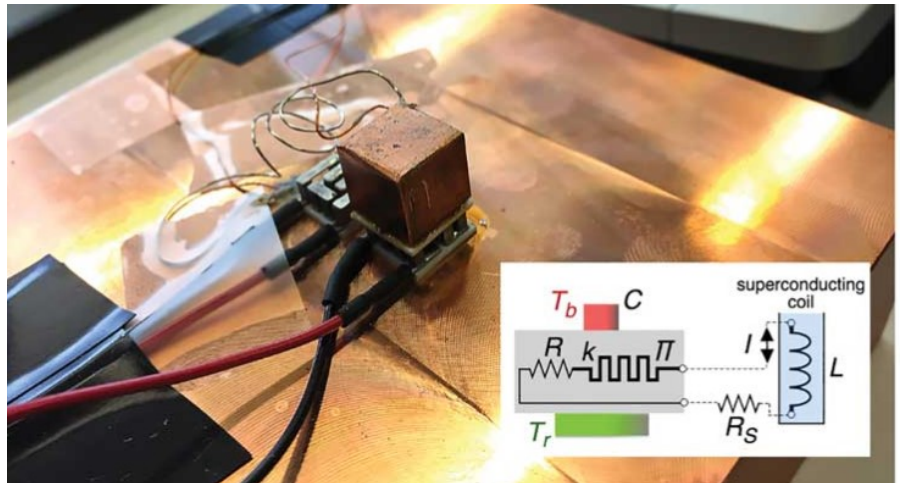


New Technologies That Could Be the Future of HVACR

Cryocoolers, solar thermal collectors, responsive window panels, and more

THE CRYOCOOLER

A teapot full of boiling water on the kitchen table will gradually cool down because heat is flowing from the hot water to the colder table. However, its temperature is not expected to fall below that of the table. By itself, heat can only flow from a warmer object to a colder **one**, not the other way around. To cool the water further, it would have to be placed in a refrigerator, which consumes energy from outside to make it work. That's the second law of thermodynamics — one of the fundamentals of physics.



THE SOLAR THERMAL COLLECTOR

Therm-X is a solar-thermal assisted air-conditioning, heating, and refrigeration system, and it's already on the market.

The Therm-X adds a solar thermal collector, following the compressor and before the condenser. That allows the sun to provide free energy, so the compressor doesn't have to work as hard to produce the thermal energy required to meet the delta T requirements to produce credible subcooling. The collector has a copper or stainless steel pipe that runs through an evacuated glass tube, so the glass doesn't come into contact with the refrigerant. The sun's radiation creates heat inside the evacuator tube, a bit like a thermal flask.



The SKYCOOL SYSTEM BLASTS HEAT INTO SPACE

Most people see space as a source of heat from the sun. But away from the sun, outer space is really a cold place. Shanhui Fan, professor of electrical engineering and director of the Edward L. Ginzton Laboratory at Stanford University, and his team have developed a material that turns the cold of outer space into a renewable resource for heating and cooling. They're using a solar material — an optical film 1.8 microns thick, made of quartz and silicon carbide, which not only reflects heat from the sun but also uses radiative cooling — to reflect as much as 97 percent of sunlight while emitting the thermal energy of the building it is placed on.

To learn more go to <https://www.achrnews.com/articles/141304-new-technologies-that-could-be-the-future-of-hvacr>

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A year of working from home:

Home Office's post-coronavirus lockdown plan revealed. "You should not expect to be back in your usual workplace anytime soon," officials told Home Office staff in England could be working from home for the next year as departments limit the number of people working in their buildings to comply with coronavirus social-distancing measures, a departmental email has revealed.

The message, from Home Office permanent secretary Matthew Rycroft and second perm sec Shona Dunn and seen by CSW, sets out a four-phase plan for staff to return to work in the coming months.

The department bosses set out a four-phase plan for staff to return to the office as lockdown measures are eased, which will see a limited number of people allowed on site to enable social distancing to continue. At the moment, all Home Office staff apart from those who are considered key workers and need to be in an office to do their jobs, are working from home.



"For most it is likely that this situation will remain the case for the next six to 12 months so if you are currently working from home, you should not expect to be back in your usual workplace any time soon," Rycroft and Dunn said.

"It is important that no one makes their own decisions about returning to the workplace and no business areas should assume they will revert to their old footprint," they added.

<https://www.civilserviceworld.com/professions/article/a-year-of-working-from-home-home-offices-postcoronavirus-lockdown-plan-revealed>

Let us help you - with new idea's / new designs /new innovations in M&E engineering -Proposed New Build & developments.

We help Architects, developers, main contractors, with the M&E designs. We cooperate with you to get the M&E designs completed on time and within budget.

Check if you should go back into work—<https://www.gov.uk/coronavirus-employee-risk-assessment>

Use this service to find out if you should go back to work during this phase of coronavirus lockdown, and what you can do if you should not be going into work.

If you're currently on furlough you can stay on furlough. However, if you are asked to come off furlough by your employer, you can use this service to find out if you should be going back into work, and how to return to work safely.

You will be asked about your:

- type of work
- health
- Household

If you or anyone in your household currently have symptoms of coronavirus then you must not go to work.

This guidance is only for England.

Guidance from the [Scottish Government](#), [Welsh Government](#) and [Northern Ireland Assembly](#) is also available.



Cyclists to be handed £50 bike repair vouchers under government fitness drive

Cycling fanatic Boris Johnson is promising £50 repair vouchers as part of his coronavirus crusade to persuade people to get on their bike.

The first 50,000 will be available in England late on Tuesday on a first come, first served basis to those who register online.

The aim of the bike repair vouchers is to encourage people to get their old bicycles out of the shed, fixed and safe to ride, so they cycle to the shops or see friends rather than use public transport.

Launched 24 hours after Mr Johnson's [anti-obesity campaign](#), the fix-your-bike voucher scheme is the latest move by the PM in his drive to boost cycling to get the nation slimmer and fitter.

<https://news.sky.com/story/cyclists-to-be-handed-50-bike-repair-vouchers-under-government-fitness-drive-12037579>

Coronavirus UPDATES: Quarantine 'to be cut to 10 days' for UK travellers from Spain

Ministers announced the controversial two week quarantine period at the weekend and Brits returning from Spain can be penalised up to £1,000 if they fail to self-isolate for a fortnight

The government is reportedly set to slash the time people arriving in the UK from Spain have to self-isolate following a backlash from holidaymakers and businesses.

Holidaymakers could soon have to quarantine for 10 days rather than a fortnight, it is claimed.



It comes as the UK's officially recorded coronavirus death toll in all settings has risen by just seven, the lowest rise since lockdown began.

<https://www.mirror.co.uk/news/uk-news/coronavirus-updates-lockdown-uk-live-22421223>

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