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Highlight:

Meet Poppy, the 3-D printed robot set to inspire innovation in classrooms

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Written in cooperation with Inria, France

European Research Council (ERC) grantee Dr Pierre-Yves Oudeyer, is today presenting the first complete open-source 3D printed humanoid robot, called “Poppy” ([@poppy_project](#)). Poppy is a robot that anybody can build – its body is 3D printed and its behaviour programmed by the user. However, it is not just a tool for scientists and computer “geeks” – the team of developers aims to use the robot as part of vocational training in schools, giving students the opportunity to experiment and program 3D printed robots with various characteristics.

Poppy was developed in France by [Inria's Flowers team](#), which creates computer and robotic models as tools for understanding developmental processes in humans. Dr Pierre-Yves Oudeyer, who holds an ERC Starting Grant in Computer Science and Informatics, comments: *“The advances offered by 3D printing have already revolutionised design and industry. However, only very little has been done to explore the benefits of 3D printing and its interaction with computer science in classrooms. With our Poppy platform, we are now offering schools and teachers an adequate tool to cultivate the creativity of students studying in fields such as mechanics, computer sciences, electronics and 3D printing”.*

Build your own robot

Poppy's body is 3D printed and its behaviour determined with freely available software, meaning users can design body parts quickly and easily, and program their robot's behaviour themselves. Dr Oudeyer clarifies: *“Both hardware and software are open source. There is not one single Poppy humanoid robot but as many as there are users. This makes it very attractive as it has grown from a purely technological tool to a real social platform”.*

Accessible hardware and software make it easy for users to experiment with building their own robots for the first time. Poppy is now also compatible with the Arduino platform, which allows the robot to interface with other electronic devices, including smart clothing, lights, sensors and musical instruments.

Do It Yourself in schools

Dr Oudeyer, who is a Research Director at [Inria](#), plans to extend use of this technology beyond research labs, to the educational sector in particular. Commenting on the Poppy initiative, EU Commissioner for Research, Innovation and Science Máire Geoghegan-Quinn said: *“This is a great offshoot of an ERC project: a low-cost platform that could foster a more interactive and inspiring learning environment, allowing students to connect with research and design.”*



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The Poppy platform has come about thanks to the ERC-funded “Explorers” project, in which Dr Oudeyer studies the mechanisms of learning and development using robots. *“Our hypothesis is that the body is an essential variable in the acquisition of motor and social skills in humans. To study this theory, we needed to create a platform allowing fast experimentation of new robot morphologies. This led to the Poppy platform”.*

Talking about the benefits of his ERC-funded research, Dr Oudeyer highlights: *“My ERC grant was essential in developing problem-solving and critical thinking ability in robotics. I would now be glad if students who need more education in computer science, coding and design, could train using Poppy and perhaps, later, be able to find a job in the robotics sector”.*

Gathering across frontiers

Poppy will also allow users to share their ideas and results in a very open and collaborative way through a dedicated web [platform](#) - gathering people across the frontiers of school, art, science and industry.

Dr Oudeyer’s team has already used Poppy in other fields, including the arts. In an ongoing artist residence programme entitled “Etres et Numériques”, the team worked with a dancer and a visual artist to explore the emotions and perceptions of body gestures and movements using the robot (see more [here](#)). They expect to extend these experiments to other artistic performances.

In his recent TEDxCannes [talk](#), Dr Oudeyer explained how open-source baby robots can help scientists, and society at large, better understand the human mysteries of learning, curiosity and language acquisition.

To find out more about the project:

<http://www.poppy-project.org/>

Video: <http://vimeo.com/76917854>

Pictures: <https://www.poppy-project.org/illustration/>

[Development team](#): M. Lapeyre, P. Rouanet, S. Nguyen, S. Ribas, J. Grizou, A. Le Fahler, F. Depraetre, C. Moulin-Frier, P-Y. Oudeyer.

Note to the editors

Set up in 2007 by the EU, the **European Research Council (ERC)** is the first pan-European funding organisation for frontier research. It aims to stimulate scientific excellence in Europe by encouraging competition for funding between the very best, creative researchers of any nationality and age. The ERC also strives to attract top researchers from anywhere in the world to come to Europe.

Under the new EU research and innovation programme *Horizon 2020*, the ERC has a substantially increased budget of over €13 billion.

The ERC consists of an independent Scientific Council and an Executive Agency. The Scientific Council, the ERC's governing body, is composed of 22 distinguished scientists and scholars who define the scientific funding strategy and methodologies, and act on behalf of the scientific community



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to promote creativity and innovative research in Europe. Prof. Jean-Pierre Bourguignon has been the ERC President since 1 January 2014. The ERC Executive Agency implements the ERC component of *Horizon 2020* and is led by Director Pablo Amor.

[Inria](#) is a public science and technology institution established in 1967. It is the only public research body fully dedicated to computational sciences. Combining computer sciences with mathematics, Inria's 3,449 researchers strive to invent the digital technologies of the future.

ERC press contact

Maud SCELO
Press and Communication advisor
Phone: +32 (0) 2 298 15 21
Mobile: +32 (0) 460 752 466
ERC-press@ec.europa.eu

Inria Bordeaux – Sud-Ouest

Séverine VALERIUS
Communications director
Phone: +33 (0)6 75 61 37 34
severine.valerius@inria.fr