Workshop Inria/EPFL – February 2017

Inria Flowers / EPFL LSRO

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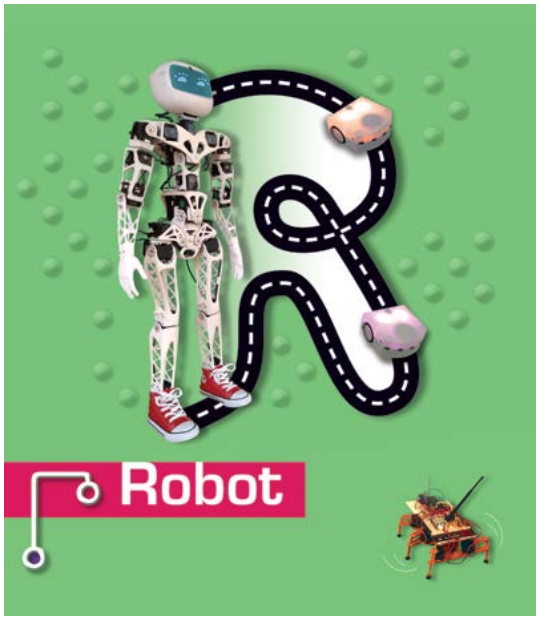
Common starting point



Thymio II

- First contact 2.5 years ago around Thymio
- Creation of the Inirobot kit to teach robotics and programming
- Rapid deployment of Inirobot in France and Switzerland

The Inirobot strategy

- Introduction to computing and programming
- Introduction to robotics

- Micro world of learning
- Scientific inquiry
- Cooperative work

Activities (booklets)
- Free and open
- Created with teachers.
- Tested in the field.
- Ready to use, with solutions.

- Affordable and robust robot
- An accompanying web site
- Adapted training

The Inirobot strategy

Carnet de missions IniRobot

Documents externes | indication sur la difficulté | Durée estimée | Besoin du Thymio | Besoin du logiciel | Activité débranchée

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MISSION 1 : C'est quoi ce truc ?

Il s'agit de découvrir le robot Thymio 2 en totale autonomie.

Consigne : « On a trouvé cet objet. Aidez-nous à apprendre des choses sur lui. Donnez-lui un nom »

Déroulement : Le robot est donné aux enfants. La consigne est simple : ils doivent découvrir Thymio, sans aucune indication. A la fin de cette activité, les enfants doivent savoir allumer le robot et constater qu'en appuyant sur les flèches, Thymio change de couleur.

MISSION 2 : Des couleurs et des comportements

Fiche page suivante

Il s'agit de découvrir les programmes pré-enregistrés dans le robot.
« Quand on appuie sur certains boutons, le truc a des comportents différents »

Déroulement : On explique qu'il existe des programmes pré-enregistrés dans le Thymio, que les flèches servent à faire défiler les comportements et que le bouton rond sert à valider.
Il faut compléter la grille en donnant un nom à chaque. Pour aider à donner un nom, on peut dire : « Si c'était un animal on pourrait dire qu'il est ... ».
Dans l'idéal, les 4 premiers comportements (vert, jaune, rouge, rose) doivent avoir été reconnus.

Remarques :

- Si les comportements semblent ne pas fonctionner, vérifier que la surface sur laquelle est le Thymio est suffisamment clair. Un test : lancez le comportement jaune, si Thymio n'avance pas, c'est que la surface n'est pas assez claire.
- Les comportements bleu ciel et bleu foncé ne sont pas à trouver car ils nécessitent respectivement du matériel et un environnement calme.

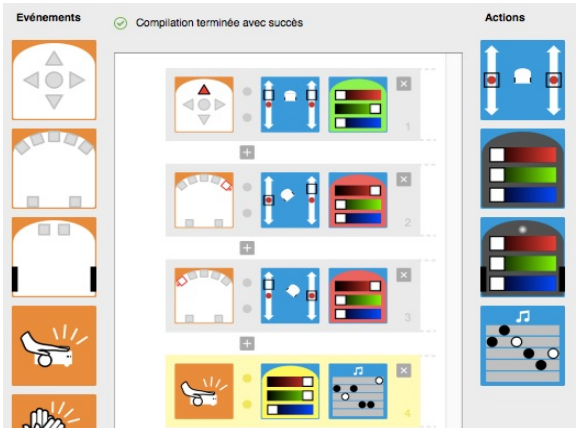
MISSION 2 : Des couleurs et des comportements – Fiche

Couleur	Action observée	En un mot	
VERT			
JAUNE			
ROUGE			
ROSE			

Inirobot: activities with Thymio II and visual programming

Use

- Informal and formal educational activities.
- 6 to 15 sessions of 30 to 75 minutes.
- A robot and one computer per group of 3 children.



Deployment

- After 2 years, used by more than 1,800 teachers and 15,000 children in 68 cities in metropolitan France and overseas.
- Manual « 1, 2, 3… codez! » distributed to >20’000 teachers
- Example of action in school: training in Gironde of pedagogical advisors CTBT (covering approximately 1,000 schools).
- Examples of diffusion in extracurricular activities: La Rochelle, Lille, Lormont, Pessac, Talence,...

Software developments

For the Inria project « Class'code »
and for « Voyageurs du code – Code Décode »

Thymio Scratch and Snap! (coordination by Didier Roy)

- Thymio Scratch (with David Sherman, Inria Pléiade, and Mobsya)
- Thymio Snap! (with Didier Roy, based on work of David Sherman)

Thymio simulator (coordination by Didier Roy)

- Stéphane Magnenat (EPFL, Mobsya), David Sherman (Inria Pléiade), Thibault Lainé (software engineer SED Inria Bordeaux)

Research

Common workshops (see dm1r.fr)

- Annual workshop « Robotique et Éducation » in Bordeaux (2015, 2016)
- Next workshop on July 18, 2017, with the International Scratch Conférence

Common publications

- IniRobot : a pedagogical kit to initiate children to concepts of robotics and computer science.
  Didier Roy, Gordana Gerber, Stéphane Magnenat, Fanny Riedo, Morgane Chevalier, Pierre-Yves Oudeyer, Francesco Mondada (2015). RIE 2015, May 2015, Yverdon-Les-Bains, Switzerland.
- Preparing a Thymio / Scratch publication for the Scratch Conférence.

Research

Exchanges

- Stéphane Magnenat (EPFL/ETH Zurich)
    - Student project on Thymio VPL adaptive tutorial
    - Personalised Tutoring through Cyber-Physical Games
- Morgane Chevalier (PhD student EPFL)
    - Thymio and computational thinking, connecting finite state machines and literature

Teaching

Exchanges on educational material

- Inirobot (INRIA)
- Thool project (SNF), educational material HEP Vaud - EPFL

Continuing education

- Didier Roy gives courses of continuing education for teachers at EPFL on educational Robotics

R2T2

R2T2 mission

- Year 2032. A meteorite has damaged a station supplying energy on Mars. You must restart the main generator. We have 16 robots on Mars, at the entrances to the station.
- 16 Thymio robots have to be programmed remotely from different countries by 100 roboticists (from 8 to 16 years old) divided into 16 teams
- International cooperative mission
- No competition between teams, but a competition together against difficulties, also a competition with yourself to give your best, listen to others, act as a team, jointly.

R2T2

R2T2 missions

November 4, 2015

- 1 team from Italy (Borgonovo Val Tidone)
- 4 teams from France (Ayguemorte-les-graves, Floirac, Talence, Vandoeuvre les Nancy)
- 8 teams from CH (Genève, Founex, Lausanne, Fribourg, Sion, Zürich)
- 1 team from Autria (Graz)
- 1 team from Russia (Moscow)
- 1 team from South Africa (Durban)

F. Mondada, E. Bonnet, S. Davrajh, W. Johal and R. Stopforth. R2T2 : Robotics to Integrate Educational Efforts in South Africa and Europe, in International Journal of Advanced Robotic Systems, vol. 13, num. 5, p. 1-13, 2016

Missions R2T2

November 2, 2016

- 6 teams from CH (Genève, Founex, Lausanne, Sion, Zürich)
- 4 team from Italy (Borgonovo Val Tidone, Rho Milano)
- 4 teams from France (Issy-les-Moulineaux, Pessac, Floirac, Sophia Antipolis)
- 1 team from Russia (Moscow)
- 1 team from South Africa (Durban)

Missions R2T2

Janvier 24, 2017 : Americaraibes

- 3 teams from Canada (Québec)
- 4 teams from Mexico (Guadalajara)
- 5 teams from France (Fort-De-France, Saint-Esprit)
- 2 teams from Guyane (Kourou, Rémire-Montjoly)
- 2 teams from Sainte-Lucie (Castries)

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Inria

robotics Swiss National Centre of Competence in Research

swiss space center

Certificate of participation

Awarded to

for attending the R2T2 event
as member of one of the rescue team
in charge of programming Thymio robots
to implement a rescue mission
in collaboration with 15 other teams!

January 24th, 2017

Pr. Francesco Mondada, EPFL Dr. Didier Roy, Inria