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Overview and new insights of GT9 ²RM Réseau Métier Roboticiens Mécatroniciens

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Some updates about ^2RM network

- ⦿ Reminder: network opened to the whole ESR (« Enseignement Supérieur et Recherche ») like all the professional networks of CNRS.
 - Technical mailing list: 2rm@services.cnrs.fr, 189 subscribers, mainly engineers and technicians.
 - A network to share experience, knowledges and help each other.
- ⦿ At beginning of 2018: renewal for 3 years of the ^2RM steering committee:
 - Gérald Dherbomez, Ing. CNRS CRISAL, coordinator
 - Pierre Laguillaumie, Ing. Univ. Poitiers, PPRIME
 - Matthieu Herrb, Ing. CNRS, LAAS
 - Arnaud Blanchard, Ing. CNRS, ETIS
 - Stéphane Bonnet, Ing. CNRS, Heudiasyc
 - François Marmoiton, Ing. CNRS, Institut Pascal
 - Laurent Barbé, Ing. Univ. Strasbourg, iCube



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Positioning



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- ① Facilitate the exchanges between the members of the network (**sharing knowledge and expertise**)
 - Feedback on equipments and technologies
 - Sharing technical resources (sources codes, CAD designs, documentation, savoir-faire, ...)
 - Technical trainings
- ② Strong links with professional networks of MITI CNRS : DEVLog (computer science), RdE (electronics), RdM (mechanics)
- ③ Relation with technological networks like reseau_drones@services.cnrs.fr, impression3d@services.cnrs.fr, liste-rfa@services.cnrs.fr ...

Workshops organized in 2019 (1/4)

- Co-organization of the **ROSCon FR 2019** with GT4 and GT7
 - 11 & 12 June 2019 at Paris, CNRS.
 - 22 presentations focused on ROS 1 and 2 middleware with 2 invited sessions
 - Brian Gerkey, CEO of Open Source Robotics Foundation
 - Ludovic Delval, consortium ROS-Industrial European IPA-Franhofer
 - And 3 special presentations from Esteve Fernandez - Apex.Ai, Mikael Arguedas – alumni OSRF, Thomas Moulard - Amazon



Sponsors Or



Sponsors Argent



Sponsors Bronze



Workshops organized in 2019 (2/4)

robotex

- Participation to the Robotex Techdays in Paris and Cergy Pontoise
 - Location: ISIR and ETIS
 - Dates: 24 & 25 June 2019
 - <http://equipex-robotex.fr/techdays/techdays-2019/>



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Workshops organized in 2019 (3/4)

Technical workshop on « Autonomous Vehicle and Terrestrial Robotics » with GT2

- Heudiasyc, 10th September 2019
- <https://2rm.cnrs.fr/2019/08/29/journee-technique-2rm-vehicules-autonomes-et-robotique-mobile-terrestre/>
- Demonstrations from Renault (static) and Heudiasyc (live) :
 - collaborative insertion in roundabout
 - trajectory following thanks to roscontrol



Workshops organized in 2019 (4/4)

Technical days on « Soft Robotics » with GT1 and GT6

- ① CRIStAL, 26-27 November 2019
- ① <https://jrs2019.sciencesconf.org/>
- ① Visit of CRIStAL lab. with demonstrations of [SOFA framework](#) and [PRETIL](#) platform.



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Training – ANF DeepRobot 2019

« Action Nationale de Formation » **Mise en œuvre des techniques d'apprentissage (« deep learning ») pour la robotique**

- Lille, 4 to 8 November 2019, budget of 18 k€
- 30 participants from CNRS, IRSTEA, Inria, Universities.
 - Theory about machine learning, deep learning and AI for robotics
 - Christian Wolf, LIRIS and Philippe Xu, Heudiasyc
 - 1,5 days of practical work on real robots (15 Turtlebot3 with Nvidia Jetson Nano boards) : gesture detection by deep learning.



Actions of 2020 postponed due to pandemy



- ⦿ Techdays Robotex at iCube in June 2020
- ⦿ Tech day at PPRIME on 14th October 2020 about « networks and industrials communication protocols » (5G, OPCUA, Powerlink Eth.)
- ⦿ Mobile robotics at LAAS
- ⦿ Reflection on a Humanoid technical day, topics to identify
- ⦿ ROSCon FR 2020 in Toulouse (digital edition?)

Coming soon in 2021...

Prospectives 2021

① Carry on the technical and technological identified topics:

- New technologies for 3D-4D printing (scientific inputs from GT1 - GT6)
- Challenge of middleware and frameworks (scientific inputs from GT4)
- Recent works in AI and usage onboard the robots (scientific inputs from interGT learning and robotics of GDR Rob – ISIS)
- Emergence of new sensors (scientific inputs from GT2)
- Availability of new huge computing capabilities and use of Cloud (inputs from GT4)
- And COVID19 related issue: how to efficiently teleoperate robots (remote control through the Internet)?

② Integration of ²RM to the **CNRS MITI** professional and technological networks

- Easier way to fund training sessions
- Budget for technical animation in complement of the workshops co-organized with scientific GT.



Towards open infrastructure

- ⦿ Promote **open science** at the level of the robotics platforms:
 - **Open source** software for non confidential projects
 - Common codes shared across the platforms
 - Facilitate expertise mutualisation, knowledge sharing
 - **Open data** objectives
 - Public datasets available with publications
 - Usage of data repositories managed by French institutions
 - Improve the quality of the developments and the **research reproducibility**
- ⦿ In phase with the **TIRREX project**.



Conclusion



Join us

- Web site : <https://2rm.cnrs.fr>
- Wiki : <https://wiki.2rm.cnrs.fr>
- Mailing list : 2rm@services.cnrs.fr
- Mattermost Messaging : <https://framateam.org/cnrs-2rm>
- A github organization : <https://github.com/2rm-robotics/>