Curriculum Vitæ *September 22, 2011*

Thierry FRAICHARD

INRIA Research Scientist.

Personal Information

Born on Feb. 1st, 1964 in Sellières (FR).
French citizen, married, two children.

Positions

Dec. 94–present: Research Scientist, INRIA Grenoble Rhône-Alpes (FR).
Dec. 93–Nov. 94: Post-doctoral fellow, Robotics Inst., Carnegie Mellon Univ., Pittsburgh (US); working with Prof. Matthew Mason.
Sep. 91–Aug. 93: Teaching Assistant, Pierre Mendès-France Univ., Grenoble.

Visiting Positions

Sep. 07–Aug. 08: Visiting Professor, Autonomous Systems Lab., Swiss Federal Inst. of Technology (ETH), Zürich (CH); working with Prof. Roland Siegwart.
Sep.–Dec. 02: Japan Society for the Promotion of Science Fellow, Distributed Adaptive Robotics Research Unit, Riken Inst., Saitama (JP); working with Prof. Hajime Asama.
Nov. 00–Jan. 01 & Nov. 01: Tan Chin Tuan Fellow, Intelligent Systems Lab., Nanyang Technological Univ. (NTU), Singapore; working with Prof. Michel Pasquier.

Education

Accreditation to Supervise Research[1], Mar. 06, Inst. Nat. Polytechnique de Grenoble (INPG). *Contributions to Motion Planning.*
PhD in Computer Science, Apr. 92, INPG. *Motion Planning for a Nonholonomic Mobile in a Dynamic Workspace.*
Master in Computer Science, Jun. 88, INPG. *Motion Planning in a Multi-Agent World.*

Honours

European Robotics PhD Award to Dizan Vasquez's PhD (Apr. 09).
IEEE Senior Member (Feb. 09).
Grants & Fellowships:

[1] Habilitation à Diriger des Recherches.

Japan Society for the Promotion of Science Fellowship, 02.
Singapore Tan Chin Tuan Fellowships, 00 & 01.
French Ministry of Research and Education scholarship, 88-91.

Conference papers selected for special journal issues:

Int. Symp. of Robotics Research 07 $\rightsquigarrow$ IEEE Trans. on Intelligent Transportation Systems.
IEEE-RSJ Int. Conf. on Intelligent Robots and Systems 03 $\rightsquigarrow$ Advanced Robotics.
Int. Conf. on Field and Service Robotics 03 $\rightsquigarrow$ Int. Journal of Robotics Research.

Graduate Students Advised

PhD

Alessandro Renzaglia, Grenoble Universités, *Distributed Control for Autonomous Helicopters, expected Spring 12.* Co-supervision with Dr. Agostino Martinelli.

Qader Baig, Grenoble Universités, *Perception for Intelligent Vehicles Using Bayesian Techniques, expected Spring 12.* Co-supervision with Dr. Olivier Aycard.

Luis Martinez, Grenoble Universités, *Safe Navigation for Autonomous Vehicles in Dynamic Environments: an Inevitable Collision State Perspective, Nov. 10.*

Vivien Delsart, Grenoble Universités, *Autonomous Navigation in Dynamic Environments: a Trajectory Deformation Approach, Oct. 10.*

Stéphane Petti, Ecole Nat. Sup. des Mines de Paris, *Partial Motion Planning Framework for Safe Navigation in Dynamic Environments, Jul. 07.*

Dizan Vasquez, INPG, *Incremental Learning for Motion Prediction of Pedestrians and Vehicles, Feb. 07* (**European Robotics PhD Award**).

Christophe Coué, INPG, *Multimodal Analysis of Cluttered Dynamic Environments Using Bayesian Models, Dec. 03.* Co-supervision with Dr. Pierre Bessière.

Alexis Scheuer, INPG, *Continuous-Curvature Path Planning for Nonholonomic Mobile Robots, Jan. 98.*

Raphaël Mermond, INPG, *Motion Planning with Geometric Uncertainty in Sensing and Control, aborted Jun. 97.*

Philippe Garnier, INPG, *Reactive Motion Execution Control for Vehicles in Dynamic and Structured Environments, Dec. 95.*

Master

Juan Lahera, Master of Science in Informatics at Grenoble (MOSIG), *Cooperative Navigation, Sep. 09.*

Antoine Bautin, MOSIG, *Probabilistic Inevitable Collision States, Jun. 09.*

Vivien Delsart, INPG-Université Joseph Fourier (UJF) "Image, Vision & Robotics" Master (IVR), *From Path to Trajectory Deformation, Jun. 07.*

Ouri Maler, IVR, *Cooperative Navigation for Car-Like Vehicles, Jun. 07.*

Rishikesh Parthasarathi, IVR, *Inevitable Collision States for a Car-Like Vehicle, Jun. 06.*

Alejandro Vargas, IVR, *Coupling On-Board and Off-Board Vision for Localisation, Sep. 04.*

Julien Burlet, INPG-UJF "Intelligence, Interaction & Information" Master, *Robust Navigation Using Markov Decision Processes, Jun. 04.*

Dizan Vasquez, IVR, *Long-Term Motion Prediction of Future Motion, Sep. 03.*

Stéphane Blondin, IVR, *Motion Planning with Perceptual Constraints, Jun. 02.*

Fabrice Vincent, IVR, *Environment Modelling and Robot Localisation with Ultrasound, Jun. 97.*

Raphaël Mermond, IVR, *Nonholonomic Motion Planning with Geometrical Uncertainty, Jun. 96.*

Alexis Scheuer, IVR, *Planning Continuous-Curvature Paths for Nonholonomic Vehicles, Jun. 92.*

Misc. Internships

Nicolas Picco, engineer student, Universidad Nacional de Rosario (AR), *Design of a safe navigation architecture for unknown dynamic environments [Sep. 10-Fev. 11].*

Leonardo Scandolo, engineer student, Universidad Nacional de Rosario (AR), *Design of an anthropomorphic navigation scheme [Apr. 10-Sep. 10].*

Sara Bouraine, PhD, Centre de Développement des Techniques Avancées, Algiers (AG), *From inevitable collision states to braking inevitable collision states [Dec. 09-May 10].*

Stéphane Laforet, engineer student, Conservatoire National des Arts et Métiers (CNAM), *Design of a control architecture for autonomous navigation [Jan. 07-Dec. 07].*

Boniface Eric, engineer student, Conservatoire National des Arts et Métiers (CNAM), *Design of a map server for dynamic environments [Nov. 04-Oct. 05].*

Ortega Hugo, Master student, Technològico de Monterrey (ITESM), Campus Monterrey (MX), *Detecting and tracking moving objects with a pan-tilt camera [Apr.Jul. 04].*

Schaerer Joël, engineer student, Institut National des Sciences Appliquées (INSA), *Computing inevitable collision states [Aug. 03-Dec. 03].*

Hélin Frédéric, engineer student, Conservatoire National des Arts et Métiers (CNAM), *Design of a map server for dynamic environments [Jan. 03-Jul. 03].*

Burlet Julien, Magistère student, UJF, *Robust motion planning using Markov Decision Processes [Oct. 02-Sep. 03].*

Vargas Alejandro, Master student, Technològico de Monterrey (ITESM), Campus Cuernavaca (MX), *Iterative motion planning in dynamic environments [Sep. 01-Feb. 02].*

Billiau Pierre, engineer student, Ecole Nationale Supérieure d'Informatique et de Mathématiques Appliquées de Grenoble (ENSIMAG),*Steering methods for car-like vehicles [Jul.Sep. 01].*

Fave Sébastien, engineer student, Ecole Universitaire d'Informatique de Grenoble, *Iterative motion planning [Jul.Sep. 01].*

Kok Hin Chan, engineer student, Nanyang Technological Univ. (NTU), *Planning and controlling the motion of the Cycab vehicle [Jan.Jun. 00].*

Desvigne Richard, engineer student, Ecole des Hautes Etudes Industrielles de Lille (FR), *Continuous-curvature path planning for nonholonomic mobile robots [Jun.Nov. 99].*

Liévin Gilles, engineer, *Reactive motion planning for car-like vehicles [Sep. 89-Aug. 90].*

Collaborations

Researchers, Professors

Prof. Hajime Asama, Distributed Adaptive Robotics Research Unit, Riken Inst., Saitama (JP).

Prof. Jose-Luis Gordillo, Centro de Sistemas Intelligentes, Tecnológico de Monterrey, Campus Monterrey (MX).

Prof. James Kuffner, Robotics Inst., Carnegie Mellon Univ., Pittsburgh (US).

Prof. Matthew Mason, Manipulation Lab., Robotics Inst., Carnegie Mellon Univ., Pittsburgh (US).

Prof. Francisco Moo Mena, Univ. of Yucatan (MX).

Prof. Michel Pasquier, Intelligent Systems Lab., School of Computer Engineering, NTU, Singapore.

Prof. Zvi Shiller, Univ. of California, Los Angeles (US), and Ariel Univ. Center (IL).

Post-Doctoral Fellows

Dr. Chen Gan, Inst. Nat. des Sciences Appliquées de Lyon (FR), *Autonomous Navigation in Dynamic Environments [Feb. 06–Jan. 07]*,

Dr. Guo Dong, NTU, *Multi-Sensor Data Fusion to Sense The Environment of a Car [Nov. 99–Oct. 00].*

Dr. Lambert Alain, Université de Technologie de Compiègne (FR), *Planning Safe Motion Strategies for Nonholonomic Vehicle [Apr.–Oct. 99].*

Research Contracts and Projects

Coordinator

French-Korean project Star **SafeMove**, "Dependable Robotic Navigation" *[Jan. 04–Dec. 05].*

French project Robea **ParkNav**, "Interpretation of Complex Dynamic Scenes and Reactive Motion Planning" *[Oct. 02–Sep. 05].*

French-Mexican project Lafmi **NavDyn**, "Navigation of an Autonomous Vehicle in a Dynamic Environment" *[Oct. 02–Sep. 04].*

Task Leader

European project FP6-IST-12224 **Carsense**, "Sensing of Car Environment at Low Speed Driving", "Sensor Data Fusion" task *[Jan. 00–Dec. 02].*

European project Inco-Copernicus "Multi-Agent Robot Systems for Industrial Applications in The Transport Domain", "Navigation of Mobile Robots" task *[Feb. 97–Jan. 99]*.

Partner

European project FP7-ICT-246587 **interactIVe**, "Accident Avoidance by Active Intervention for Intelligent Vehicles", *[Jan. 10-Jun. 13]*

French-Asian ICT project **Cityhome**, "From Cyber Transportation to Mobile Service Robots", *[Nov. 08–Dec. 11]*.

European project FP7-ICT-212154 **Have-It**, "Highly Automated Vehicles for Intelligent Transport", *[Feb. 08–Aug. 11]*.

European project FP6-IST-27140 **BACS**, "Bayesian Approach to Cognitive Systems", *[Jan. 06–Feb. 10]*.

European project FP6-IST-212154 **Cybercars 2**, "Close Communications for Cooperation between Cybercars" *[Jan. 06–Dec. 08]*.

French-Asian ICT project **FACT**, "French-Asian Cyber Transportation", *[Nov. 05–Dec. 07]*.

Profusion I, "Robust and Oprimized Perception by Sensor Data Fusion", horizontal activity within the European Integrated Project FP6-507075 Prevent, "Preventive and Active Safety Applications" *[Feb. 04–Jan. 08]*.

French project Predit-3 **Mobivip**, "Public Individual Vehicles for Mobility in Downtown Area" *[Nov. 03–Oct. 06]*.

European project FP6-IST-28487 **Cybercars**, "Cybernetic Cars for a New Transportation System in the Cities" *[Aug. 01–Jul. 04]*.

French CNRS programme "Man-Machine Cooperation For Driving Assistance" *[Sep. 99–Aug. 03]*

French project **La Route Automatisée** *[Jan. 98–Dec. 01]*

French-Russian Liapunov Inst. project, "Optimal Control For Nonholonomic Vehicles" *[Jan. 97–Dec. 98]*.

French project **Praxitèle** *[May 93–Jun. 97]*.

French CNRS "Intelligent Machines" programme on driving assistance *[Jan. 94–Dec. 97]*.

European project Eurêka **Prometheus Pro-Art**, "Programme for a European Traffic with Highest Efficiency and Unprecedented Safety" *[Jan. 87–Dec. 94]*.

European project Cost-13 "Modelling an Autonomous Agent in a Multi-Agent World" *[Jan. 88–Dec. 89]*.

Scientific Activities

Seminars

The Difficulty of Safely Navigating Dynamic Environments, Ariel Univ. Center (IL), *Dec. 09*.

Safe Autonomous Navigation in Open and Dynamic Environments, Univ. of Karlsruhe (DE), *Jul. 09*.

Trajectory Generation for Trajectory Deformation, Ariel Univ. Center (IL), *Dec. 08*.

Motion Safety in Dynamic Environments, Swiss Polytechnic Federal Inst., Zürich (CH), *Jan. 08*.

Dynamic Environments and Safe Motions, Ariel Univ. Center (IL), *Dec. 07*.

Safely Navigating Dynamic Environments, Simon Fraser Univ., Vancouver (CA), *Dec. 07*.

Safe Motion in Dynamic Environments, Carnegie Mellon Univ., Pittsburgh (US), *June 07*.

Motion Safety for Mobile Robots, INRIA Grenoble Rhône-Alpes, *Feb. 07*.

Safe Motion in Dynamic Environments, Univ. of Zaragoza (ES), *Jun. 06*.

Safe Motion Planning in Dynamic Environments, LAAS-CNRS Lab. Toulouse, *Jan. 05*.

Motion Planning in Uncertain Environments, INRIA Grenoble Rhône-Alpes, *Nov. 04*.

Tools for Autonomous Navigation, SungKyunKwan Univ., Seoul (KR) *Oct. 04*.

Inevitable Collision States: a Step Towards Safer Robots, Tokyo Univ. (JP), *Dec. 02*.

From Path to Motion Planning, Riken Inst., Saitama (JP), *Oct. 02*.

Advanced Motion Planning Techniques for Robotic Vehicles, Nanyang Tech. Univ., Singapore, *Jan. 01*.

Continuous-Curvature Path Planning for Car-Like Vehicles, Riken Inst., Saitama (JP), *Nov. 99*.

From Reeds and Shepp's to Continuous-Curvature Paths, Tsukuba Univ. (JP), *Nov. 99*.

Faisabilité de manoeuvres automatisées, "Man-machine cooperation for driving assistance" workshop, Cluny (FR), *Sep. 99*.

Planning Sub-Optimal and Continuous-Curvature Paths for Car-Like Robots, Univ. of Brasilia (BR), *Nov. 98*.

Car-Like Robots and Moving Obstacles, Carnegie Mellon Univ., Pittsburgh (US), *Jan. 94*.

Planification de mouvement en environnement dynamique, LIFIA-CNRS Lab. Grenoble, *Apr. 93*.

Smooth Path Planning For a Nonholonomic Vehicle in a Structured World, LAAS-CNRS Lab. Toulouse, *Mar. 91*.

Motion Planning in a Multi-Agent World, Artificial Intelligence Lab., Bruxelles (BE), *Jul. 90*.

Invited Talks

Provably Safe Navigation for Mobile Robots with Limited Field-of-Views in Dynamic Environments, "Guaranteeing Motion Safety for Robots" workshop (with RSS), Los Angeles (US), *June 11*.

Motion Safety in Dynamic Environments, an Introduction, "Guaranteeing Safe Navigation in Dynamic Environments" workshop (with ICRA), Anchorage (US), *May 10*.

Motion Safety for Mobile Robots, "Bayesian Approach to Cognitive Systems" workshop, Grenoble, *Feb. 07*.

Motion Safety in Dynamic Environments, "Safe Navigation in Open and Dynamic Environments" workshop (with IROS), Beijing (CN), *Oct. 06*.

Safety in Dynamic Environments, "Sensor-Based Motion for Complex Robots in Complex Environments" workshop (with ICRA), Orlando (US), *May*

06.

Safe Motion Planning in Dynamic Environments, "Motion Planning in Virtual Environments" workshop, Toulouse (FR), *Jan. 05.*

Motion Planning in Uncertain Environments, France-Singapore workshop on Autonomous Robots, Grenoble, *Nov. 04.*

Tools for Autonomous Navigation, France-Korea Symp. on Dependable Navigation), Seoul (KR) *Oct. 04.*

Programme Committees

IEEE Int. Conf. on Robotics and Automation (ICRA) *[Since 05]*, **Associate Editor since 09**.

IEEE-RSJ Int. Conf. on Intelligent Robots and Systems (IROS) *[Since 97]*, **Associate Editor since 10**.

Eur. Conf. on Mobile Robots (ECMR), *since 09.*

IFAC Symp. on Robot Control (SYROCO), Dubrovnik (HR) *Sep. 12.*

IEEE Intelligent Vehicles Symp. (IV), San Diego (US), *June 10*, **Associate Editor**.

IEEE Int. Conf. on Robotics and Biomimetics (ROBIO), Bangkok (TH), *Feb. 08.*

Int. Symp. on Distributed Autonomous Robotic Systems (DARS), Tsukuba (JP), *Nov. 08.*

Workshop on Planning, Perception and Navigation for Intelligent Vehicles, Roma (IT), *Apr. 07.*

Int. Conf. on Robotics and Biomimetics (ROBIO), Kunming (CN), *Dec. 06*, Bangkok (TH).

Workshop on Robotics of the Mexican Encounters in Computer Science, San Luis Potosi (MX), *Sep. 06.*

Int. Conf. Robotics: Science and Systems (RSS), Philadelphia (US), *Aug. 06.*

Iberoamerican Conf. on Artificial Intelligence, Puebla (MX), *Nov. 04.*

Int. Symp. on Automotive Technology and Automation. Florence (IT), *Jun. 92.*

European Workshop on Intelligent Co-pilot. Grenoble, *Dec. 91.*

Conference Organisation

"Guaranteeing Motion Safety for Robots" workshop; associated with Robotics: Science and Systems Conf. (RSS), Los Angeles (US), *June 11.*

"Guaranteeing Safe Navigation in Dynamic Environments" workshop; associated with IEEE Int. Conf. on Robotics and Automation (ICRA), Anchorage (US), *May 10.*

Robotics: Science and Systems Conf. (RSS), local arrangements, Zürich (CH), *Jun. 08.*

France-Korea Workshop on Advanced Driver Assistance Systems, Paris (FR), *Dec. 05.*

France-Korea Symposia on Dependable Robotic Navigation Workshop Seoul (KR) *Oct. 04 & Oct. 05.*

IEEE-RSJ Int. Conf. on Intelligent Robots and Systems (IROS), secretary. Grenoble, *Sep. 97.*

European Workshop on Intelligent Co-pilot. Grenoble, *Dec. 91.*

Invited Session Organisation

Autonomous vehicle technologies for complex environnements, Int. Conf. on Control, Automation, Robotics and Vision (ICARCV), Kunming (CN), *Dec. 04*.
INRIA-NTU joint research on mobile robotics, ICARCV, Singapore, *Dec. 02*.
Tools for future transport systems, ICARCV, Singapore, *Dec. 00*.

Reviewing Activities

Projects

Expert evaluator for the European Commission (6^{th} and 7^{th} Framework Programmes, Information Society Technologies).
Expert evaluator for the Israel Science Foundation.
Expert evaluator for the Research Agency of the Piemont Region, Italy.
Expert evaluator for the CNRS and the French Research Agency (ANR).

Journals

Int. Journ. of Robotics Research (IJRR), IEEE Trans. on Robotics (TRO), IEEE Trans. on Robotics and Automation (TRA), IEEE Trans. on Control Systems Technology (TCST), IEEE Trans. on Systems, Man and Cybernetics (TSMC), Int. Journ. on Robotics and Autonomous Systems (IJRA), Int. Journ. on Mechatronic, Revue d'Intelligence Artificielle (RIA), Int. Journ. of Vehicle Autonomous Systems (IJVAS).

Conferences

Int. Workshop on the Algorithmic Foundations of Robotics (WAFR).
Int. Conf. Robotics: Science and Systems (RSS).
IEEE Int. Conf. on Robotics and Automation (ICRA).
IEEE-RSJ Int. Conf. on Intelligent Robots and Systems (IROS).
Int. Joint Conf. on Artificial Intelligence (IJCAI).
Eur. Conf. on Mobile Robots (ECMR).
IFAC Symp. on Robot Control (SYROCO).
Int. Symp. on Distributed Autonomous Robotic Systems (DARS).
Int. Conf. on Control, Automation, Robotics and Vision (ICARCV).
IEEE Int. Symp. on Assembly and Task Planning (ISATP).
IEEE Int. Conf. on Advanced Robotics (ICAR).
IEEE/IEEJ/JSAI Int. Conf. on Intelligent Transportation Systems (ITSC).
Int. Conf. on Intelligent Autonomous Systems (IAS).
Int. Conf. on Robotics and Biomimetics (ROBIO).
Iberoamerican Conf. on Artificial Intelligence (IBERAMIA).

PhD/HDR Committees

Sebastien Rubrecht, PhD, Université Pierre et Marie Curie, Paris, *Sep. 11*.
Ahmed Benzerrouk, PhD, Université Blaise Pascal, Clermont-Ferrand, *Apr. 11* (president of the jury).
Olivier Aycard, HDR, Université de Grenoble, *Dec. 10*.

Pierre Avanzini, PhD, Université Blaise Pascal, Clermont-Ferrand, *Dec. 10* (evaluator).
Kristijan Macek, PhD, Swiss Federal Inst. of Technology (ETH), Zürich (CH), *Jul. 10* (evaluator).
Sofiane Ahmed Ali, Université du Havre (FR), *Apr. 08* (evaluator).

Selection Committees

Assistant Professor 61MCF0387, Polytech Clermont-Ferrand, *Spring 11.*

Patents

French patent #0552735 (Sep. 05): *Procédé d'assistance à la conduite d'un véhicule et dispositif associé.*

Teaching Activities

Invited Courses

Motion Planning, Univ. of Zaragoza (ES), *Jun. 06.*
Robotics, Université Stendhal, Grenoble, *Aug. 01.*
Task and Motion Planning, Inst. Supérieur des Sciences Appliquées et de Technologies (ISSAT), Damascus (SY), *Feb. 00.*

Summer Schools

Robotics and Motion Planning, Summer school on Automatic Control for Production Systems, Grenoble *[Since 01].*
Motion Planning, Summer School on Image and Robotics *[00-05].*

Graduate Level

Autonomous Robotics and Motion Planning, INPG-UJF "Mathematics & Computer Science" Master, *[Since 07].*
Advanced Motion Planning, INPG-UJF Doctoral course *[Spring 05 & 06].*
Motion Planning, IVR, *[Since 01].*
Robot Programming, IVR, *[Since 94].*

Undergraduate Level

Bayesian Networks, UJF *[Spring 06 & 07]* & Polytech Grenoble *[Fall 05 & 06].*
Robotics, Conservatoire Nat. des Arts et Métiers, Grenoble, *May 02.*
Robot Programming, Ecole Nat. Sup. d'Informatique et de Mathématiques Appliquées de Grenoble (ENSIMAG) *[88–96].*
Computer Technology, Inst. Univ. de Technologie, Grenoble *[88–93].*

Community Service

Gravir Laboratory Committee *[Jan. 03–Dec. 06].*

INRIA Grenoble Rhône-Alpes Research Center Committee *[Feb. 01–Jan. 08]*.
INRIA Grenoble Rhône-Alpes Health and Safety Committee *[Sep. 00–Aug. 07]*.
INRIA Joint Administrative Committee*[Jan. 97–Dec. 99]*.