Mayank Shekhar JHA

mayank-shekhar.jha@univ-lorraine.fr
+33 6 60 67 32 51
w3.cran.univ-lorraine.fr/mayank-shekhar.jha

Associate Professor (*Maître de conférences*) — CNU Section 61
Born 11 September 1989 (Muzaffarpur, Bihar, India) — Married, one child

Rank / status	Associate Professor since 09/2017, **tenured since 2018** (University of Lorraine), 6th Grade.
RIPEC	Recipient of an **individual RIPEC award (2023–2026)**.
Core expertise	**Prognostics and Health Management (PHM)**; **Safe Reinforcement Learning**, **Deep-Learning-based Prognostics**, **Prognostics-aware Control for Nonlinear Dynamical Systems**.

Current Position — Host Institution

Teaching institution	Polytech Nancy (Ecole Polytechnique de l'Université de Lorraine), University of Lorraine. 2 rue Jean Lamour, 54509 Vandoeuvre-lès-Nancy Cedex, France.
Research laboratory	**CRAN**, CNRS UMR 7039, University of Lorraine. Faculty of Science and Technology — B.P. 70239, 54506 Vandoeuvre-lès-Nancy Cedex, France.
Position profile	Position no. **61MCF0896** — Industrial maintenance and dependability of production systems (Polytech Nancy).

Professional Experience

Since 09/2017	**Associate Professor**, University of Lorraine — Polytech Nancy; researcher at CRAN (CNRS UMR 7039).
2017	**Research Associate**, Rolls-Royce University Technology Centre, University of Sheffield (United Kingdom).
2016–2017	**Teaching and Research Assistant (ATER)**, École Centrale de Lille.
2016	**Postdoctoral Researcher**, Clément Ader Institute, INSA Toulouse (Horizon 2020 — Clean Sky 2).

Academic Degrees

2015 **Ph.D.** in Computer Engineering, Automatic Control and Signal Processing, CRIStAL (CNRS UMR 9189), École Centrale de Lille / University of Lille 1 (defended on 08/12/2015).
Dissertation: *Diagnostics and Prognostics of Uncertain Dynamical Systems in a Bond Graph Framework*. Awarded *Highest Honours*.
Doctoral committee: Chair: Prof. N. Zerhouni (University of Franche-Comté); Reviewers: Prof. W. Borutzky (Bonn-Rhein-Sieg UAS, Germany), Dr. R. Gouriveau (University of Franche-Comté); Examiner: Prof. J. A. Vaz (NIT Jalandhar, India); Supervisors: Prof. G. Dauphin-Tanguy (principal supervisor), Prof. B. Ould Bouamama (co-supervisor).

2012 **Research Master's Degree** in Control Engineering, *SMaRT* (Systems, Autonomous Machines and Field Networks), Ècole Centrale de Lille & University of Lille 1.

2011 **Bachelor of Technology** in Mechanical Engineering, National Institute of Technology (NIT) Jalandhar, India.

Summary of Teaching Activities

Academic and Administrative Responsibilities (Polytech Nancy — M3 Department)

- **Since 2025**: Coordinator for **industrial activities** (apprenticeship engineering track, Years 1–3; ∼35 students/year).
- **Since 2024**: **International mobility coordinator** (engineering cycle, Years 1–3; ∼30 students/year).
- **Since 2021**: Coordinator for **4th-year industrial internships** (M1 / Year 2 of the engineering cycle; ∼35 students/year).
- **2018–2022**: Coordinator of the **Integrated Logistics Support (ILS)** track.

Teaching (selected)

Courses created (Master's Level (M2))	*Artificial Intelligence for Prognostics* (28 equivalent teaching hours); *Introduction to Deep Learning* (48 equivalent teaching hours, Python/PyTorch & MATLAB); *Reinforcement Learning for Optimal Control Synthesis* (18 equivalent teaching hours, Python/PyTorch & MATLAB).
Laboratory classes designed	*Failures and Anomalies of Industrial Components* (M1, 12 equivalent teaching hours, test benches/sensors); *Mobile Robot Control* (M2 IA2R, 16 equivalent teaching hours, QCar/QBot/3pi+).
Other courses	*Dependability and Data Collection* (M1/M2, 48 equivalent teaching hours); *Digital Signal Processing* (M1, 24 equivalent teaching hours); *Computer Architecture* (L1, 48 equivalent teaching hours).

Note: Approximately 80% of the teaching material is in English and available online: teaching webpage.

Summary of Research Activities and Supervision

Ph.D. and Postdoctoral Co-Supervision (structured selection)

Level	Period	Supervision / topic (share, funding, highlights)
Ph.D.	2025–	**R. Mandiya** — *LLM-based Diagnostics and Prognostics of Cardiac Arrhythmia (LLMARC)* **(20%)**; supervised with Prof. D. Theilliol; DREAM project; CRAN/IJL/School of Surgery.
Ph.D.	2024–	**S. Marthi** — *Safe Control System Design through Reinforcement Learning* **(50%)**; ANR *SOS* project (CRAN/CRIStAL/Lynxdrone).
Ph.D.	2023–	**T. Rutschke** — *Physics-Driven Identification of Nonlinear Systems for Reinforcement Learning* **(50%)**; funded by the French Ministry of Higher Education and Research.
Ph.D.	2021–2024	**S. Kanso** (defended) — *Safe Reinforcement Learning and Degradation-Tolerant Control* **(50%)**; funded by the French Ministry of Higher Education and Research; several Q1 journal papers and international conference publications.
Ph.D.	2020–2023	**M. H. de Beaulieu** (defended) — *Deep Learning for Nonlinear System Identification and Prognostics* **(50%)**; industrial collaboration with **Dassault Aviation**.
Postdoc	2021–2023	**Dr. J. Thuillier** — Prognostics Aware Control Design (Collaboraiton with CNES) for Liquid Propulsion (Reusable) Rocket Engine (LPRE).

M2 Supervision (research internships)

- **2019** W. Qian — *Dynamic Programming-Based Optimal Control of RUL* (bearings).
- **2020** M. Chelouati — health-aware control design (reusable propulsion systems, CNES); G. Kontzler — degradation modelling and RUL prediction.
- **2021** S. Kanso — health-aware control design (CNES).
- **2023** G. C. Andrei — *Deep Reinforcement Learning for Dynamical Systems.*
- **2024** S. Marthi — *Safe Reinforcement Learning for Nonlinear Discrete-Time Systems*; R. Luo — *MPC for Safe Control Design* (CNES).

ORION Excellence Scholarship (Master's, 2026): excellence fellowship awarded in 11/2025 — international recruitment in progress (M. Jesus JIMENEZ); topic: safe control learning for drones, with a focus on SLAM-based perception, estimation, and control under explicit safety constraints.

Quantitative Overview

Supervision	Volume
Co-supervised Ph.D. theses	5 (including 3 ongoing)
Co-supervised postdoctoral researcher	1
M2 research internships supervised	7 (+1 ongoing, ORION 2026)

Projects & Collaborations (selected)

Partner	Period	Project / role (key elements)
CNES	2026–2028	Accepted project (EUR 72k): optimal mission planning under end-of-life component constraints **(PI)**.
CNES	2023–2025	*Health-Aware Learning Control System Design for Reusable Cryogenic Liquid-Propellant Rocket Engines* (EUR 50k; **Co-PI**).
CNES	2021–2023	*Health-Aware Control Design of Liquid-Propellant Rocket Engines* (EUR 120k; **Co-PI**; 24-month postdoctoral funding).
Dassault Aviation	2020–2023	Predictive maintenance for Falcon 6X business aircraft: Ph.D. project of M. H. de Beaulieu (budget EUR 210k).
ANR SOS	2023–2027	*Self-Organizing, Smart, and Safe Heterogeneous Robots Fleet* — **Scientific Lead and Work Package Leader** (CRAN/CRIStAL/Lynxdrone).
ECOS-Sud	2022–2025	France–Chile project: *Continuous-Time Nonlinear Identification Using Deep Learning* (CRAN & UTFSM/AC3E, Valparaíso).

Scientific Output (See all publications here)

Type	Count
Articles in international journals	17
Book chapters	3
Proceedings papers in international conferences	24
Technical reports	6

Scientific Leadership and Visibility — International & National (selected)

Organization / invitations (international)

2026 PHME (Oslo) — **Round-Table Panel** Co-organisation with Prof. Olga Fink, EPFL, *Health Aware Control* (confirmed).
2026 EuroGNC (Madrid) — **invited talk** (pre-conference workshop): *Control-Barrier-Function-Based Safe Reinforcement Learning* (confirmed).
2026 XI Summer School on Diagnosis of Complex Systems (UPC Terrassa/Barcelona) — **invited lectures**: *Deep Learning for Prognostics* (confirmed).
2026 IFAC World Congress (South Korea) — **pre-conference workshop organization** (under review, co-organized with **C. Kulkarni, NASA Ames & Olga Fink, EPFL**).
2026 European Control Conference (ECC) — **pre-conference workshop organization** (under review, co-organized with **B. Jayawardhana**, Groningen).
2025 IEEE Conference on Decision and Control (CDC) — **co-organization** of two invited sessions on *Safe, Secure and Learning-Based Control* (confirmed).
2025 IEEE American Control Conference (ACC) (Denver) — invited session on *Secure and Learning-Enabled Systems*.
2025 ECC (Thessaloniki) — invited session on *Safe and Fault-Resilient Control Learning and Design*.
2023 IFAC World Congress (Yokohama) — invited session on diagnostics, prognostics, and health-aware control.

Invited talks (international)

10/2025 DLR (Braunschweig, Germany) — *Safe Reinforcement Learning with Provable Guarantees*.
07/2025 UC Berkeley (United States) — *Safe RL with Provable Guarantees for Nonlinear Discrete/Continuous-Time Systems*.
07/2025 NASA Ames (United States) — *Safe Reinforcement Learning and Prognostics-Aware Control Design*.
05/2025 University of Groningen (Netherlands) — *Safe Reinforcement Learning with Provable Guarantees*.
06/2023 NASA Ames (PCOE, United States) — *Safe Reinforcement Learning and Prognostics*.
03/2023 UTFSM (Chile) — *Learning-Based Approaches for Prognostics, Safe Control, and System Identification*.
11/2022 NASA Ames (PCOE, United States) — *Safe Reinforcement Learning and Prognostics*.
02/2021 ICEIC (South Korea) — *Prognostics of Systems Under Degradation*.
06/2020 NIT Jamshedpur (India) — *Introduction to Deep Learning* (AICTE–ATAL).
02/2020 KIST Europe (Germany) — *PHM Using Bayesian Estimation and Deep Learning*.

Community-building initiatives and scientific leadership (France)

11/2024 GDR MACS seminar (ENSAM/Le Cnam, Paris) — co-organizer: *Health-Aware and Safe Control Learning & Design*.
11/2023 GDR MACS scientific day (ENSAM, Paris) — co-organizer: *Health-Aware and Safe Control Design*.
11/2022 Thematic seminar (Polytech Nancy) with CNES — co-organizer: *Health-Aware Control Design in Aerospace*.
2023–2025 Lead and coordinator of the GDR MACS thematic action: *Health-Aware Control Design in Dynamic Systems*.
2026 Co-organization of a GDR MACS technical committee on *CADO* (under development; presentation planned at SAGIP, 06/2026).

Ph.D. examination committees (examiner)

06/2025 Dr. Xin Fang — UPC (Barcelona, Spain): *Fault Diagnosis and Prognosis Using Data-Driven Residuals*.
11/2024 Dr. Périclès Cocaul — Université Paris-Saclay (with ArianeGroup & ONERA): *Safe Deep Reinforcement Learning for Autopilot Control Laws*.
05/2024 Dr. Armaan Garg — IIT Ropar (India): *Multi-UAV Policies Using Deep Reinforcement Learning*.
04/2023 Dr. Laknath B. Semage — Deakin University (Australia): *Robust and Efficient Reinforcement Learning for Physics Tasks*.

Editorial service and scientific reviewing (selected)

- **Guest Editor** (09/2025–) for the special issue *Safe and Fault-Resilient Control for Complex Systems*, *European Journal of Control* (Elsevier).
- **Associate Editor** (2024–) for *Aerospace Science and Technology* (Elsevier).
- **Editorial Board Member** (2024–) for *Scientific Reports* (Nature Portfolio).
- Reviewer for IEEE Control Systems Letters; IEEE Transactions (Cybernetics, Reliability, SMC); and Elsevier journals including *ISA Transactions*, *Mechanical Systems and Signal Processing*, *Engineering Applications of Artificial Intelligence*, *Reliability Engineering & System Safety*, *Neural Networks*, among others. Lists: Web of Science ; ORCID.

Last updated: March 18, 2026