

Benaissa Dekhici

Researcher in
Bioenergy &
Data-Driven
Innovations

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About Me

I am a researcher in Bioenergy and Data-Driven Innovations, with a focus on the intersection of engineering, data science, and sustainable energy systems. My work involves developing advanced modeling, control, and data analytics solutions to address real-world challenges in bioenergy and environmental engineering. I am passionate about leveraging technology to drive progress in sustainability and create a positive impact on a global scale. Extensive travel experience having lived in Algeria, Italy, Turkey, and the UK, providing multicultural perspective and adaptability.

Work Experience

- Feb 2024–Present **PDRA in Bioenergy Process Optimisation and Control**, University of Surrey, England, UK
- Focusing on advanced optimisation under uncertainty for bioenergy industry digitalization
 - Linked to UKRI Supergen Bioenergy Impact Hub
 - Developing cutting-edge control strategies for sustainable energy systems
- Sept 2020–Jun 2021 **Teaching Assistant**, University of Tlemcen, Tlemcen, Algeria
- Courses: Linear Multivariable Systems, Nonlinear Systems, Optimal Control
 - Supervised undergraduate and graduate students in advanced control theory
- Sept 2019–Jun 2020 **Teaching Assistant**, University of Tlemcen, Tlemcen, Algeria
- Courses: Multivariable Systems, Nonlinear Systems
 - Developed practical laboratory exercises and assessment materials
- Jun 2019–Sept 2019 **Trainer/Teacher**, FROMAC Academy, Tlemcen, Algeria
- Subject: Automatics and Industrial Data Processing
 - Delivered professional training programs to industry professionals
- May 2017–Jun 2019 **Research Support State Engineer**, Research Center in Industrial Technologies, CRTI, Algiers, Algeria
- Responsible for drone systems development (hardware and software)
 - Led interdisciplinary teams in UAV technology advancement
 - Contributed to multiple research publications and technical reports
- Sept 2016–Oct 2016 **Trainee as Automation Engineer**, LATAFNA Mill, Tlemcen, Algeria
- Gained hands-on experience in industrial automation systems
 - Worked on process control and optimization projects
- Since 2018 **Researcher**, Tlemcen Automatics Laboratory LAT, Tlemcen, Algeria
- Active member contributing to laboratory research initiatives
 - Collaborating on national and international research projects

Education

- 2018–2024 **Ph.D. in Automatics**, *University of Tlemcen*, Tlemcen, Algeria
Thesis: “Data-Driven Modeling, Order Reduction and Control of Anaerobic Digestion Processes”
Supervisors: Prof. Boumediene Benyahia & Prof. Brahim Cherki
Co-direction: LBE-INRAE Narbonne, France
International Mobility:
 ○ Bilateral Student at University of Trento (Aug 2022–Jul 2023)
 ○ International Credit Mobility Student at University of Trento (Aug 2021–Jul 2022)
- 2013–2015 **M.Sc. in Automatics and Industrial Data Processing**, *University of Tlemcen*, Tlemcen, Algeria
Thesis: “Commande d’un Quadrirotor Parrot Bebop Drone”
Supervisors: Prof. Brahim Cherki & Dr. Mokhtari Mohammed Rida.
- 2009–2013 **B.Sc. in Automatics**, *University of Tlemcen*, Tlemcen, Algeria

Research Projects

- Feb 2024–Present **Rapid Digitalisation of Bioenergy for Higher Efficiency and Profit**, *UKRI Supergen Bioenergy Impact Hub*
 Developing advanced optimization frameworks to transform the bioenergy industry into a data-driven, digitalized Industry 4.0 sector.
- Jan 2025–Aug 2025 **Biomethane Islands – Feasibility Study**, *Future Energy Networks: Network Innovation Allowance*
 Developed base simulation for mass and energy balance, cost estimation, designed small-scale pilot system, and delivered profitability assessment.
- Nov 2024–Feb 2025 **D-Xpert: AI-Based Recommender System for Smart Energy Saving**, *Innovate UK Project*
 Dynamic Heat Flow Model Development, HVAC Profiling, AI Occupancy Model, and Model Predictive Control Algorithm development.
- Jul 2024–Dec 2024 **Integrating CFD Modeling and Kinetics for Enhanced Anaerobic Digestion**, *The Carbon Recycling Network Business Interaction Voucher*
 Developed automated methodology integrating CFD with kinetic models and Bayesian Optimisation for optimizing anaerobic digester mixing systems.
- Oct 2024 **Techno-economic Analysis of Novel Water Treatment System**, *Consultancy with Intelligent Tomorrow Ltd*
 Developed base simulation for mass and energy balance, cost estimation, designed pilot system, and delivered profitability assessment.

Technical Skills

- Process Engineering Bioenergy Systems, Process Systems Engineering, Anaerobic Digestion Processes, AD and Biogas Expert
- Data Science Machine Learning, Dynamic System Identification, Data-Driven Approaches, Model Order Reduction, Control Systems, Industrial Informatics, Artificial Intelligence
- Programming Python (Advanced), MATLAB/Simulink (Advanced), C++ (Intermediate)
- Languages English (Fluent), French (Fluent), Arabic (Native)

Hobbies

- Interests Reading research articles, exploring new ML tools, playing and watching football, traveling, and engaging with new technologies.