

Dr. Damien MOURATILLE

Neuroergonomics and Human Factors researcher

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EDUCATION

June 2022 | **PhD in Cognitive Neuroscience, FRENCH CIVIL AVIATION UNIVERSITY (ENAC), Toulouse**
June 2019 | Supervision : Pr. Franck Amadiou and Dr. Nadine Matton

June 2018 | **Neuropsychology and Cognitive Master's Degree, WITH HONORS, University of Toulouse**
September 2016 | Supervision : Pr. Andre Tricot and Dr. Radouane El Yagoubi

RESEARCH EXPERIENCE

Today | **Post-doc, ENAC, Toulouse**
June 2022 | Supervision : Dr. Nadine Matton and Dr. Jean-Paul Imbert
Project 1 : Selection of Air Traffic Controllers based on psychotechnical et physiological measures
Project 2 : Competency-based training and assessment of Air Traffic Controllers and Pilots
Project 3 : Aging and cognitive abilities of Swiss Air Traffic Controllers
Project 4 : Selection of pilots based on psychotechnical measures
Project 5 : Development of an eye-tracking library (ArGaze)
Current

June 2022 | **PhD thesis, ENAC, Toulouse**
June 2019 | Supervision : Dr. Nadine Matton and Pr. Franck Amadiou
Research Topic : Individual differences in competencies : psychotechnical and physiological assessments applied to the selection of air traffic controller students
Confidential Finished

September 2018 | **Engineer, CNRS, Toulouse**
July 2018 | Supervision : Dr. Pierre-Vincent Paubel and Dr. Bastien Tremoliere
Research Topic : Mortality salience and physiological validation
Mortality salience Eye-Tracker ECG EDA Finished

June 2018 | **Master thesis, CLLE, Toulouse**
October 2017 | Supervision : Pr. Andre Tricot and Dr. Radouane El Yagoubi
Research Topic : Road safety and cognitive load - TBRS model and physiological measures
Working memory Cognitive workload EEG fNIRS EDA ECG Car simulator Finished

September 2017 | **Research assistant, Co-DOT AND THALES CANADA, Quebec City (Canada)**
May 2017 | Supervision : Dr. Cindy Chamberland & Pr. Sebastien Tremblay
Research Topic : Cognitive countermeasures as an intelligent solution to surveillance work
Attentional tunneling Eye-Tracker ECG EDA CCTV simulator Finished

April 2017 | **Research assistant, ISAE-SUPAERO, Toulouse**
January 2017 | Supervision : Pr. Mickael Causse
Research Topic : Decision making, Deafness and neurocognitive processes
Deafness High-density EEG ERP LORETA Finished

May 2017 | **Master thesis, ENAC, Toulouse**
September 2016 | Supervision : Dr. Radouane El-Yagoubi, Dr. Nadine Matton and Pr. Mickael Causse
Research Topic : Relationships between emotion and cognitive workload on flight simulator
Cognitive workload Emotion EEG fNIRS EDA ECG Flight simulator Finished

TEACHING EXPERIENCE

- ▶ Everything you need for a successful defense (*French Air Traffic controller students, French Aviation Technician students, African Aviation Technician students, Engineering students, ENAC, France*) : 230h
- ▶ Cognitive Psychology (*Psychology students, University Toulouse Jean Jaurès, France*) : 48h
- ▶ Introduction to psychophysiology (*Psychology students, University Toulouse Jean Jaurès, France*) : 40h
- ▶ Statistics (*STAPS students, University Toulouse Paul Sabatier, France*) : 24h
- ▶ Human Factors & Physiological measures (*CHI students, Engineering students, ENAC, France*) : 26h
- ▶ EEGLAB : Introduction & Hands-on (*Master and PhD students, Researchers, University of Mons, Belgium*) : 4h

May 2019 | (Neuro/Data)Scientist, HUMAN DESIGN GROUP, Toulouse (France)
October 2018 | Industrial Topic : Multimodal sensors fusion for pilot monitoring at EYDN – AIRBUS Operation S.A.S.
Sensors Benchmarking Python Finished

SKILLS

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| Programming | Python, Matlab, R, PHP, JS, React-Native, Arduino, ESP32 |
| Hardware | Bitalino, Brain products, Biosemi, Biopac, Enobio, NirX, EyeLink, PupilLabs, SmartEye, Tobii |
| EEG | Assessment of brain rhythms (spectral analysis), extraction of neuronal activation induced by stimulus (ERP), resolve of inverse problem (LORETA) |
| ECG | Heart rate and heart rate variability (temporal analysis), assessment of sympathetic and parasympathetic activity (spectral analysis) |
| fNIRS | Assessment of hemodynamic activity (temporal analysis) |
| Eye-Tracker | Scan path, pupillometry |
| EDA | Assessment of tonic and phasic components (temporal analysis), assessment of sympathetic activity (spectral analysis) |
| Statistics | Descriptive and inferential statistics, basic machine learning (SVM, LDA, LSTM), meta-analysis |
| Others | LabStreamingLayer, LaTeX, Eprime, Qualtrics, Microsoft Office |

SCIENTIFIC COMMUNICATIONS

Scientific journal :

- ▶ **Mouratille, D.**, Amadiou, F., & Matton, N. (Manuscript submitted for publication). Cognitive Abilities for Air Traffic Controllers Selection : A Valid Predictor for Scientific Proficient Applicants?.
- ▶ de la Hogue, T., **Mouratille, D.**, Causse, M., & Imbert, J.-P. (Manuscript submitted for publication). ArGaze : An Open and FLEXible Software Library for Gaze Analysis and Interaction.
- ▶ Fabre, E. F., **Mouratille, D.**, Bonnemain, V., Palmiotti, G. P., & Causse, M. (Manuscript submitted for publication). Making Moral Decisions With Artificial Agents As Advisors. An fNIRS Study.
- ▶ Causse, M., **Mouratille, D.**, Rouillard, Y., El Yagoubi, R., Matton, N., & Hidalgo-Muñoz, A. (2024). How a pilot's brain copes with stress and mental load? Insights from the executive control network. Behavioural Brain Research, 456, 114698.
- ▶ **Mouratille, D.**, Amadiou, F. & Matton, N. (2022). A Meta-Analysis on Air Traffic Controllers Selection : Cognitive and Non-Cognitive Predictors. Journal of Vocational Behavior, 138.
- ▶ Causse, M., Parmentier, F., **Mouratille, D.**, Thibaut, D., Kisselenko, M., & Fabre, E. (2022). Busy and confused? High risk of missed alerts in the cockpit : an electrophysiological study. Brain Research, 1793.
- ▶ Hidalgo-Muñoz, A. R., **Mouratille, D.**, El-Yagoubi, R, Causse, M., Rouillard, Y., & Matton, N. (2021). Conscientiousness in Pilots Correlates with Electrodermal Stability : Study on Simulated Flights under Social Stress. Safety 2021, 7, 49.
- ▶ Djeriouat, H., Matton, N., & **Mouratille, D.** (2021). Does hostile intent cause physiological changes? An airport security check simulation experiment. International Journal of Psychophysiology, 165, 29-35.
- ▶ Hidalgo-Muñoz, A. R., **Mouratille, D.**, Matton, N., Causse, M., Rouillard, Y., & El-Yagoubi, R. (2018). Cardiovascular Correlates of Emotional State, Cognitive Workload and Personality Style during a Realistic Flight Simulation. International Journal of Psychophysiology, 128, 62-69.

Others :

- ▶ Causse, M., **Mouratille, D.**, Baumgartner, M., & Imbert, J.-P. (Chapter submitted for publication). The Impact of Age on Cognitive Performance at Work : A Focus on Pilots and Air Traffic Controllers. In Handbook of Aviation Neuropsychology; A Practical Guide for the Clinician.
- ▶ **Mouratille, D.**, Amadiou, F. & Matton, N. (September 2024). Cognitive Abilities and Gender during Air Traffic Controllers Selection and Training. 35th Conference of European Association for Aviation Psychology (EAAP). Athens (Greece).
- ▶ Marois, A., **Mouratille, D.**, Pratviel, Y., Chamberland, C., & Tremblay, S. (July 2024). Using Cardiac and Electrodermal Activity as Cognitive Markers for Interruptions and Distraction in a Surveillance Simulation. AHFE 2024. Nice (France).
- ▶ Baumgartner, M., Cabon, P., Drogoul, F., Causse, M., Imbert, J.-P., & **Mouratille, D.** (July 2024). Scientific Evaluation of the Impact of an Increase in the Retirement Age on the Cognitive Functions and Well-Being of Air Traffic Controllers (ATCOs). AHFE 2024. Nice (France).

- **Mouratille, D.**, Cabon, P., Drogoul, F., , Imbert, J.-P., Baumgartner, M., & Causse, M. (July 2024). Évaluation Scientifique de l'Augmentation de l'Age de Départ à la Retraite sur les Fonctions Cognitives et le Bien-être des Contrôleurs Aériens. XXVes Journées Internationales de Psychologie Différentielle. Rennes (France).
- **Mouratille, D.**, Amadiou, F. & Matton, N. (July 2024). Hâbiletés cognitives pendant la formation de contrôleur aérien : stabilité ou évolution?. XXVes Journées Internationales de Psychologie Différentielle. Rennes (France).
- **Mouratille, D.**, Amadiou, F. & Matton, N. (May 2024). A Preliminary Study on the Predictive Validity of Neural Efficiency for the Air Traffic Controllers Selection. 2024 International Conference on Cognitive Aircraft Systems (ICCAS). Toulouse (France).
- **Mouratille, D.**, Cabon, P., Drogoul, F., , Imbert, J.-P., Baumgartner, M., & Causse, M. (May 2024). A Physiological Study on the Impact of Aging on Cognitive Performance of Air Traffic Controllers. 2024 International Conference on Cognitive Aircraft Systems (ICCAS). Toulouse (France).
- **Mouratille, D.**, Cabon, P., Drogoul, F., Causse, M., Imbert, J.-P., & Baumgartner, M. (May 2024). The Retirement Age of ATCOs : A Case Study on the Application of Science to Address a Societal Issue in Switzerland. 2024 Annual Meeting of the Aerospace Medical Association. Chicago (USA).
- Causse, M., **Mouratille, D.**, & Imbert J.-P. (2023). Cognitive performance and ageing in air traffic controllers : when to retire? 2023 Padova MAIA Project. Padova (Italia).
- **Mouratille, D.**, Matton, N. & Amadiou, F. (2021). A Preliminary Study on the Usefulness of Physiological Assessment for the ATCO Selection. 2021 International Symposium on Aviation Psychology (ISAP). Oregon State University (USA).
- Hidalgo-Muñoz, A. R., **Mouratille, D.**, Matton, N., Causse, M., Rouillard, Y., & El-Yagoubi, R. (2020). Influence of Anxiety and Mental Workload on Flight performance in a Flight Simulator. In proceedings of 1st International Conference On Cognitive Aircraft Systems (ICCAS). Toulouse (France).
- **Mouratille, D.**, Hidalgo-Muñoz, A. R., Matton, N., Rouillard, Y., El-Yagoubi, R. & Causse, M. (2020). Flight simulator and fNIRS : study of relation between acute stress and cognitive workload. In proceedings of 1st International Conference On Cognitive Aircraft Systems (ICCAS). Toulouse (France).
- Hidalgo-Muñoz, A. R., **Mouratille, D.**, Matton, N., Causse, M., Rouillard, Y., & El-Yagoubi, R. (2018). Cognitive workload and personality styles in pilots : a heart rate study. Driver Distraction and Inattention (DDI). Gothenburg (Sweden)
- **Mouratille, D.**, Hidalgo-Muñoz, A. R., Matton, N., Causse, M., Rouillard, Y., & El-Yagoubi, R. (2017). Emotional state and cognitive workload during a flight simulation : heart rate study. In proceedings of 19th International Conference on Applications of Neuropsychology, Cognition, Emotion, and Motivation (ICANCEM). Venice (Italy).
- Hidalgo-Muñoz, A. R., **Mouratille, D.**, Matton, N., Causse, M., Rouillard, Y., & El-Yagoubi, R. (2017). Cardiovascular Activity linked to the Emotional State and Cognitive Workload during a Flight Simulation. In proceedings of 4th International Conference on Physiological Computing Systems (ICPCS). Madrid (Spain).

OTHERS

- Member of an association of science popularization : Incognu (Toulouse) since September 2019
- Doctoral student representative at ENAC Research Council (Toulouse) : 2021-2022
- Co-organizer of 2017 Brain Week (Toulouse)