Ravi Hassanaly, Ph.D.

Postdoctoral researcher, working on deep generative models for medical imaging, working within the Aramis Lab at the Paris Brain Institute.

Paris, FR | rhassana96@gmail.com | ravih18.github.io | rhassana | ravih18 | Ravi Hassanaly

WORK EXPERIENCE

Postdoctoral researcher - AI Generative Models

CNRS - Paris Brain Institute, ARAMIS Lab

September 2024 – On going | Paris, FR

- Score based generative models and optimal transport for brain image's modality transfer and pseudo-healthy synthesis
- Emphasis on clinical translation
- Supervision of PhD candidates and software projects

Doctoral Candidate - Deep learning for medical imaging

Sorbonne Université - INRIA - Paris Brain Institute, ARAMIS Lab

November 2020 – April 2024 | Paris, FR

Pseudo-healthy image reconstruction using deep generative models for anomaly detection in neuroimaging:

- Processed multimodal neuroimaging datasets
- Developed an evaluation framework for anomaly detection
- Benchmarked SOTA deep generative autoencoders
- Contributed to and maintained open-source software
- Presented work at several international conferences

Deep Learning Research Internship

Paris Brain Institute, ARAMIS Lab

April 2020 – Septembre 2020 | Paris, FR

- Deep learning for anomaly detection in brain greymatter map
- Pseudo-healthy synthesis using autoencoders and Unets

Data Science Internship

Upfluence

March 2019 – August 2019 | Lyon, FR

- Natural language processing on social media data
- Influencers classification and recommendation algorithms

TEACHING EXPERIENCE

Introduction to computer science

Polytech Sorbonne

2021/2022 & 2022/2023 | Paris, FR

Algorithmic and Python for bachelor students

Deep learning for medical imaging

ENS Paris-Saclay, Master MVA

2021/2022 & 2022/2023 | Paris-Saclay, FR

Lab session lecturer for master students

EDUCATION

Ph.D. in Computer Science

Sorbonne Université

Nov 2020 – April 2024

Thesis title: Pseudo-healthy image reconstruction with deep generative models for the detection of dementia-related anomalies

Engineering Degree

Ecole Centrale de Lyon

Sept 2016 – September 2020

- Computer science & machine learning
- Centrale Digital Lab.
- International exchange at Keio University, Tokyo: research project at Kubo lab.
- Participated in the French Robotic Cup

M.Sc. in Data Science

Université de Lyon Claude Bernard

Sept 2019 – Sept 2020

SKILLS

Oral presentation | Scientific writing | Fast-learner | Agile project management

Python
Expert

Data Science & Deep Learning: Pytorch, Sklearn, Pandas, CUDA
Expert

Linux , Git , Bash, Slurm
High level

Neuroimaging: Nibabel, Nilearn, FSL
Good level

LANGUAGES

French
Native Speaker

English
Fluent: TOEFL 517/577

Hindi
Spoken

Japanese
Beginner

PUBLICATIONS

Book Chapters

- B. Couvy-Duchesne, S. Bottani, E. Camenen, *et al.*, "Main existing datasets for open brain research on humans," in *Machine Learning for Brain Disorders*, Springer, 2023, pp. 753–804.

Journal Articles

- R. Hassanaly, C. Brianceau, M. Solal, O. Colliot, and N. Burgos, "Evaluation of pseudo-healthy image reconstruction for anomaly detection with deep generative models: Application to brain FDG PET," *Machine Learning for Biomedical Imaging*, vol. 2, pp. 611–656, Special Issue for Generative Models 2024. DOI: 10.59275/j.melba.2024-b87a.
- E. Thibeau-Sutre, M. Diaz, R. Hassanaly, *et al.*, "Clinicadl: An open-source deep learning software for reproducible neuroimaging processing," *Computer Methods and Programs in Biomedicine*, vol. 220, p. 106 818, 2022.
- A. Routier, N. Burgos, M. Díaz, *et al.*, "Clinica: An open-source software platform for reproducible clinical neuroscience studies," *Frontiers in Neuroinformatics*, vol. 15, p. 689 675, 2021.

Conference Proceedings

- R. Hassanaly, C. Brianceau, M. Diaz, *et al.*, "Recent advances in the open-source clinicadl software for reproducible neuroimaging with deep learning," vol. 12926, SPIE, 2024, pp. 519–524.
- M. Solal, R. Hassanaly, and N. Burgos, "Leveraging healthy population variability in deep learning unsupervised anomaly detection in brain fdg pet," in *Medical Imaging 2024: Image Processing*, SPIE, vol. 12926, 2024, pp. 359–365.
- R. Hassanaly, S. Bottani, B. Sauty, O. Colliot, and N. Burgos, "Simulation based evaluation framework for deep learning unsupervised anomaly detection on brain fdg-pet," in *Medical Imaging 2023: Image Processing*, SPIE, vol. 12464, 2023, pp. 511–518.
- R. Hassanaly, C. Brianceau, O. Colliot, and N. Burgos, "Unsupervised anomaly detection in 3D brain FDG PET: A benchmark of 17 VAE-based approaches," in *Deep Generative Models workshop at the 26th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2023)*, Vancouver, Canada, 2023.

INTERESTS

Volunteering
Member of the Ajités, Association of the young researchers of the Paris Brain Institute. Organization of networking events

Cycling
Gravel Rider, Bike-packer

Football
Several years of club

Waterpolo
Winner of the "Challenge Tournament"

PRICES & AWARDS

Runner up best poster award
SPIE Medical Imaging 2023 international conference

Most creative poster award
Paris Brain Institute poster price, 2023

Runner up prix Francis Leboeuf
Runner up best student project of Ecole Centrale Lyon, 2017

Award of excellence
High school yearly awards, 2013

REFEREES

Dr. Ninon Burgos
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Prof. Olivier Colliot
CNRS - Paris Brain Institute
olivier.colliot@cnrs.fr