Rand Asswad

Master's Student in
Applied Mathematics & Computer Science

Passionate about mathematics and math-adjacent domains, currently seeking a PhD in control theory for September 2021.

Education

Mathematical Engineering @ INSA Rouen Normandie
September 2014 – August 2021

French graduate engineering program (Diplôme d'Ingénieur) with focus on applied mathematics and computer science, specialized in IA and Decision-Making.

Theoretical & Applied Computer Science @ Université de Rouen
September 2019 – August 2020

Research-oriented Masters program with focus on algebra and theoretical computer science.

Syrian Scientific Baccalaureate
June 2013

Graduation grade: 92.17%.

Experience

Research Intern @ L2S (Centralesupelec, CNRS)
November 2020 – June 2021

Worked on a bio-inspired geometric model for sound reconstruction. The spectrum of the degraded sound is lifted in the Heisenberg group and reconstructed via the Wilson-Cowan differo-integral equation.
Contributed to an article submitted to the GSI 2021 conference.
Improved and extended the implementation of the proposed model, and ran experiments on a library of speech recordings.

Research Intern @ INRIA Nancy Grand-Est
June – August 2019

Contributed to the «Mind the Gap!» algorithm developped by Pixel team that proposes a robust pipeline for generating hexahedral-dominant meshes from any global parametrization of a tetrahedral mesh.
Proposed and implemented improvements to the pipeline that helped obtain better meshes with less irregularities.

Projects

Music Information Retrieval - Masters Thesis

Research project exploring MIR algorithms for single/multiple pitch estimation and onset detection. Provided a Python API for these algorithms using own implementation and/or external libraries.

Active Contour Models - Snakes

Studied and implemented active contour models for parametric and level-set curves, evolving the curves by minimizing the mean-curvature or the geodesic metric.

Multi-Agent Reinforcement Learning

Studied Multi-Agent Reinforcement Learning in the framework of Game Theory.

Publications

An auditory cortex model for sound processing
Preprint submitted to the GSI 2021 conference in March 2021
Rand Asswad, Ugo Boscain, Giuseppina Turco, Dario Prandi, Ludovic Sacchelli.

- (+33) 6 37 03 88 67
- rand-asswad.xyz
- rand.asswad@insa-rouen.fr
- github.com/rand-asswad
- linkedin.com/in/asswadrand

Skills

Mathematics & Computer Science Theory

- ▷ Functional Analysis
- ▷ Control Theory
- ▷ Signal Processing
- ▷ Numerical Analysis
- ▷ Metaheuristics
- ▷ Probability, Statistics & Data Analysis
- ▷ Combinatorics
- ▷ Automata Theory & Language Processing
- ▷ Multi-agent Systems & MARL

Programming Languages

- ▷ `Basic:` Fortran, Matlab/Octave, Prolog, Lisp, Mathematica, Javascript, SQL, C#, PHP.
- ▷ `Experienced:` bash/shell, C, C++, Python, Julia, Java.
- ▷ `Markup:` $\LaTeX$/$\TeX$, HTML, Markdown.

Libraries & Frameworks

- ▷ `Python:` numpy, scipy, matplotlib.
- ▷ `Java:` RMI, Swing.
- ▷ `Lexer & Parser Generators:` Lex/Yacc, GNU Flex/Bison, Antlr4.
- ▷ `Web dev:` Django, Jekyll.

Software & Tools

- ▷ `OS:` GNU Linux, MS Windows.
- ▷ `Version Control:` Git, SVN.
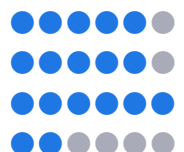- ▷ `Image Processing:` GIMP, Adobe Photoshop, Adobe Illustrator, Blender.

Languages

Language	
English	●●●●●○○
French	●●●●●●○
Arabic (native)	●●●●●●●
German (learning)	●●○○○○○

Miscellaneous

Violin (Conservatory of St-Etienne du Rouvray)

Interests

- ▷ Cinema & Art
- ▷ Camping & Hiking