

# Rand Asswad

Masters Student in  
Applied Mathematics & Computer Science

Passionate about mathematics and math-adjacent domains, interested in persuing a career in research, currently seeking a research internship.

## Education

**Mathematical Engineering @ INSA Rouen Normandie**  
September 2014 – December 2020

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 – September 2020

Research-oriented Masters program with focus on preparation for PhD.

**Syrian Scientific Baccalaureate**  
June 2013

Graduation grade : 92.17%.

## Experience

**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.

**Web Developement Intern @ INSA Rouen Normandie**  
July – September 2017

Established a *Proof of Concept* of a web client of the free software AMC that creates and manages multiple choice questionnaires (MCQ).

**Volunteer Translator (French-Arabic) @ CAFDA**  
July – August 2016

Worked with asylum seekers.

## 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.

**The Taquin Game (8-puzzle)**

A Prolog implementation of the famous sliding tiles game using graph search algorithms (Greedy, Iterative Deepening DFS, and A\*).

**AsciiMath to TeX**

An ANTLR interpretor of AsciiMath expressions into  $\LaTeX$  format.

**Floating-point Arithmetics**

A C++ implementation of mathematical operations for floating-point numbers (IEEE 754 standard) through bitwise operations using Newton's Algorithm, CORDIC and others.



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## Skills

**Mathematics & Computer Science Theory**

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

**Programming Languages**

- ▷ **Basic:** Fortran, Matlab/Octave, Prolog, Lisp, Mathematica, Javascript, SQL, C#, PHP.
- ▷ **Experienced:** bash/shell, C, C++, Java, Python.
- ▷ **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**

English   
French   
Arabic (*native*)   
German (*learning*) 

**Miscellaneous**

Violin (Conservatory of St-Etienne du Rouvray)

## Interests

- ▷ Cinema & Art
- ▷ Camping & Hiking