

ABOUT ME

I am a curious and creative person; I like overcoming professional challenges by bringing in innovative ideas.

SKILLS

CFD

CSM

Optimisation

Machine learning

Deep learning

Simulation

Modeling

Data analysis

Signal processing

Optimal control

Data Science

Finite Elements Method

Databases

Computer vision

CUDA

HPC

Networks

Web development

Medical Imaging

Multilingual

Flexibility

Teamwork

Adaptability

Communication

Rigor

Hard work

Efficiency

TOOLS

Adobe

C/C++

Python

LaTeX

PyTorch

TensorFlow

Docker

Git

Flutter

Linux

LANGUAGES

English

French

Japanese

Spanish

ROUSSEL DESMOND NZOYEM

MRes, MSc, BSc, AS.

38 Kipling Road, Bristol, BS7 0QR, UK

+44 7878430616

rd.nzoyemngueguin@bristol.ac.uk

rousseau-desmond-nzoyem

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WORK EXPERIENCE

Private Instructor | Complétude

January 2020 - January 2021

Strasbourg, FR

- Weekly monitoring of high school students in mathematics;
- Group tutoring during holidays.

Webmaster | Musica International

September 2019 - October 2019

Strasbourg, FR

- Website management of a database composed of millions of scores;
- Maintenance of the showcase website, and other software.

EDUCATION

Master of Research (MRes) in Interactive Artificial Intelligence | University of Bristol

September 2021 - September 2022

Bristol, UK

Training in Artificial Intelligence focused on:

- Data-driven AI;
- knowledge-driven AI;
- responsible AI;
- interactive AI.

Master's degree (MSc) in Applied Mathematics | University of Strasbourg

September 2019 - September 2021

Strasbourg, FR

Training in Scientific Computing and Mathematics of Information (SCMI), exploiting both theoretical and practical aspects of various domains :

- Data analysis and Deep Learning;
- Signal processing;
- Modeling/Simulation/Optimization of physical problems;
- High performance computing.

Bachelor's degree (BSc) in Mathematics | Aix-Marseille University

November 2017 - July 2019

Marseille, FR

- Semesters 5 and 6 finalizing my Bachelor's degree;
- Particular accent on theoretical principles;
- Valedictorian with 15.25 / 20.

Advanced technician's certificate in mechatronics | Oshima College of Technology

April 2017 - June 2019

Oshima, JP

- Intensive training focusing on mechanics, electronics, and computer science;
- Mastered assembly language for the CASL and CASL II machines;
- Participated in various robotics competitions.

Associate degree in computer science | University of the People

January 2017 - April 2019

Pasadena, USA

- Theoretical and applied computer science followed by web and software development projects;
- Construction of components for the HACK16 machine using the Logisim software;
- Network set-up of architectures for computers;
- Participated to various projects and MOOCs in computer science and electronics;
- Received the "Fondation Hoffmann" scholarship.

Associate degree in maths. and phys. sci. | National Polytechnique Yaoundé (NASEY)

September 2014 - April 2017

Yaoundé, CMR

- Completed the first two years in engineering school (MSP);
- Ranked sixth at the entrance examination amongst more than 4000 candidates;
- Obtained the MEXT scholarship.

## RESEARCH EXPERIENCE

### R&D Internship | Advanced Computing Research Centre (University of Bristol)

June 2022 - August 2022

Bristol, UK

Accelerating the Algebraic Multigrid (AMG) method using Machine Learning for fluid simulation:

- Reviewed the literature for current ML methods for fluid simulation on unstructured meshes;
- Implemented direct and iterative competitive solvers for benchmarking AMG;
- Built a Graph Neural Network to predict better prolongation operators using DGL and PyTorch.

### R&D Internship | Jacques-Louis Lions Laboratory (Sorbonne University)

February 2021 - July 2021

Paris, FR

Ice floe drifting and fracture by percussion in a granular model in the Arctic's Marginal Ice Zone:

- Studied the notion of initialization of a fracture in an elastic material;
- Proved Gamma-convergence results for the Francfort-Marigo model;
- Improved the MIZ simulator for Arctic ice-floes dynamics;
- Integrated the model's results into a real scale climate prediction software.

### R&D Internship | Institut Recherche Mathématiques Avancées (IRMA)

June 2020 - August 2020

Strasbourg, FR

Inverse problem involving PDEs and AI for the reconstruction of a domain's density using infrared signals that spread following the radiative transfer equation (RTE), in order to detect cancer:

- Simulated the RTE (in 1D and 2D) using a Finite Volumes splitting scheme (in two-steps);
- Solved the associated inverse problem using a convolutional neural network (CNN);
- Improved the AI's results using a VNET.

### Soft tissue simulation using the PhiFEM method | INRIA - MIMESIS

October 2020 - January 2021

Strasbourg, FR

- Reviewed the bibliography on finite elements and immersed boundary methods;
- Applied the PhiFEM method to the Poisson and the elasticity equations;
- Simulated body organ movements (in real-time) in order to assist surgeons.

## AWARDS AND SCHOLARSHIPS

### CDT Studentship | UK Research and Innovation

June 2021

Bristol, UK

- Fully-funded scholarship to follow a taught year within the Interactive AI CDT.

### MEXT (Monbukagakusho) | Japanese Government

November 2016

Tokyo, JP

- Prestigious international scholarship granted by the Japanese government;
- Only one chosen by the Japanese Embassy in Cameroon amongst hundreds of candidates.

### Fondation Hoffmann | University of the People (UoPeople)

April 2017, April 2018

Pasadena, CA, USA

- Scholarship granted (and renewed) only to the best of the promotion.

### Excellence Award | The President of the republic of Cameroon

July 2015, July 2016

Yaoundé, CMR

- Price awarded for two consecutive years for my accomplishments at the NASEY.

### Excellence Award | PKFokam Institute of Technology

July 2014

Yaoundé, CMR

- Price received for my fourth place at the PKFokam Excellence Award.

### Excellence Award | Les Brasseries du Cameroun

October 2014

Yaoundé, CMR

- Grant awarded to the best student at the GCE advanced level in each region of Cameroon.

## REFERENCES

**Dr. Emmanuel Franck** (Inria, University of Strasbourg)

+33 3 68 85 02 05, emmanuel.franck@inria.fr

**Dr. Bérenger Bramas** (Inria, University of Strasbourg)

+33 6 64 14 11 58, berenger.bramas@inria.fr

**Prof. Christophe Prudh'homme** (IRMA, Unistra)

+33 3 68 85 00 89, prudhomm@math.unistra.fr

## HOBBIES

**Video games and coding:** Fan and designer;

**Cinema and music:** Composition, documentary movies;

**Football:** Regular practice at the amateur level;

**Traveling:** Loves visiting the farthest corners of Earth.