(+41) 79 944 61 65

titouan.renard@epfl.ch github.com/RenardDesNeiges

Rue de la paix 9, 1020 Renens, Switzerland

I am a student at EPFL currently pursuing a Master of Sciences in Robotics with a minor in Data Science. I am interested in research with a focus on control theory, machine learning and their applications to robotics systems. As I have progressed in my master I realized that I have an interest in reasearch with a particular focus in optimal control, reinforcement learning and learning theory(which are the topics I have mostly worked on).

Education

Ongoing **Master in Robotics with a Minor in Data Science**, Lausanne, Switzerland 2020-Present
EPFL, STI and IC faculties

Bachelor in Microengineering, Lausanne, Switzerland 2020
EPFL, STI faculty

Bilingual Maturité, Neuchâtel, Switzerland 2016
French-English bilingual high-school, Lycée Denis de Rougemont, Physics and Applied Math

Past Projects

Learning Motor Policies with Time Continuous Neural Networks, semester project supervised by two labs, BIOROB (Biorobotics) and LCN (Laboratory of Computational Neuroscience) at EPFL, under ther supervision of Prof. Auke Ijspeert and Prof. Wulfram Gerstner. *Ongoing* 2022
Work on the use of time continuous neural networks (Liquid Time-Constant Neural Networks) to solve control problems using reinforcement learning methods, closely related to spiking neural networks and neuromorphic computing.

Power-Optimal Trajectory Generation for Airborne Wind Energy, semester project at LA3 (EPFL), under ther supervision of Prof. Colin Jones. 2021
Worked on a strongly non-linear and non-convex optimization problem, implemented an appropriate iterative solver method to deal with the non-convexity in Matlab. Project graded *6/6*.

Deep Robust Navigation with Cognitive Mapping Visual Representations, project done in the "Visual Intelligence - Machines and Minds" course at (EPFL), course given by Prof. Amir Zamir. 2021
Development and implementation of a novel deep-reinfocement learning method for visual navigation. Presentation Video of the Project.

Summer Internship, Birorobotics Lab EPFL, at the Biorobotics Laboratory at EPFL, under the supervision of Alessandro Crespi. 2018
Implementation of a simple vision-based localization system using C++ and OpenCV.

Skills

Programming, in C, C++, Javascript, Matlab, Python and Scala. Experience with OpenCV, Scipy, CasAdi, Tensorflow and Pytorch, comfortable with Unix systems and git. Experience with Google Cloud Platform for training deep learning models.

Math and Applied Math, Probabilities, Linear Algebra, Calculus, Dynamic System Theory and Control Theory, Signal Processing, Algorithmic Design and Analysis. Strong abstraction capacity, ability to mathematically formulate a concrete problem.

Soft Skills, public speaking, writing and team management learned in the context student associations, French (native proficiency), English (full proficiency), German (B2)

Relevant Courses

Course (grade is denoted by ? when it is pending)	**Grade**
Optimization for Machine Learning (CS-439)	?/6

Nonlinear Dynamics, Chaos and Complex Systems (PHYS-460)	?/6
Networks out of Control (COM-512)	?/6
Visual Intelligence, Machines and Minds (CS-503)	5.75/6
Legged Robotics (MICRO-507)	5.75/6
Model Predictive Control (ME-425)	5.75/6
Algorithms (CS-250)	5.5/6
Advanced Algorithms (CS-450)	6/6
Artifical Neural Networks (CS-456)	5.75/6
Aerial Robotics (MICRO-502)	5/6
Computer Vision (CS-442)	5.5/6
Distributed Intelligent Systems (ENG-466)	5/6
Analysis and Modelling of Locomotion (BIOENG-404)	5/6
Functional Programming (CS-210)	5.5/6

Teaching Experience

Student-Assistant at EPFL
Artifical Neural Networks 2022
For the Computer Science and Data Science students.

"Physique Générale 1" (Newtonian Mechanics) 2018-2021
For the PH-101(b) (Microengineering, Electrical Engineering and Material Sciences sections) and PH-101(d) courses (for the Mechanical Engineering section).

"Microinformatique" (basics of embedded systems programming) 2019
For the Microengineering students.

Basics of Robotics 2018
For the Microengineering students.

Material Sciences Practicals 2018
For the Microengineering and Material sciences students.

Volunteer Experience

Unipoly, student's association for sustainabily at EPFL. 2019-2022

Board member in an association of approximately 300 membres with a 20'000 CHF annual budget.

Président 2021-2022
Experience with team management and budgets.

Responsable Politique, 2020-2021
Experience in interactions with stakeholders and EPFL's direction on matters of sustainabily on campus.

Responsible of Events for the 2020 sustainabily week on EPFL campus 2019-2020
Management and coordination of about 30 events (conferences, workshops) on EPFL and UNIL's campuses.

Writer for Unipoly's Journal 2019-2021
One to two articles per year.

European Youth Parliament, Switzerland 2015-2016
English language public speaking experience.