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GABRIEL MOUGARD,
24years,
Software Engineer

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EMPLOYMENT

Software engineer — graphcore.ai, Oslo NO — (1 year, 6 month) June 2021

- **Developed core functionalities** inside the Virtual IPU team (https://docs.graphcore.ai/projects/vipu-user/en/latest/introduction.html): IPU virtualization, resources allocation and partitioning down to PCIe link management and FPGA register programming. We achieved complete virtualization of physical resources up to POD256 (64x1U machines, 3D torus/switched topology)
- **Lead the effort on distributed tracing** (OpenTelemetry, Jaeger), **logging** (Rsyslog, Logstash) and **monitoring** (Prometheus, Grafana) on all the scattered software bricks of V-IPU (CLI client, master server on host machines and daemon agents on accelerator machines)
- **Foundational work** on a custom Kubernetes IPU device operator and Slurm integration with our various shared libraries.
- Developed an **advanced E2E testing environment** for "fake" machine virtualization simulations. Working on a synchronization simulator down to tile level (understand "cores" of an IPU chip)

Software engineer, intern — criteo.com, Paris FR — (6 month) July 2020 – January 2021

- **Developed internal tools (RackGuru, InfraAnalytics and DCMA) to manage datacenters and quantitative planning forecast for Criteo's 50k+ bare-metal servers dispatched in more than 10 datacenters.**
- **Integrated** the services of multiple datacenter suppliers (Equinix, AlignedEnergy, DRT) in our own observability stack to give a better insight on the energetic and environmental metrics like power (building, cage and rack level), humidity, temperature etc.

Software engineer, intern — kombo.co, Paris FR — (6 month) July 2020 – January 2021

- **Contributed to the booking and itinerary engine**, scaled-up the payment platform from Stripe to ProcessOut and refactoring.
- **Clustered the tech stack** using Docker Swarm with support for Prometheus/Grafana/cAdvisor monitoring.
- **Helped Kombo to get 30% more traffic** and we raised 300K€ in 6 months.

EDUCATION

Oslo, Norway — OsloMet University — January 2021 - June 2021

- Erasmus exchange, European Project Semester program under the supervision of Dr. Filippo Sanfilippo. The team and I developed a snake robot powered by reinforcement learning (Deep Q-Learning and Asynchronous Advantage Actor-Critic Network (A3C)), the Robotic Operating System (ROS) and the Gazebo physic engine. (openarchive.usn.no/usn-xmlui/handle/11250/2650494)

Paris, France — ISEP Paris — September 2018 - January 2021

- M.S.E. in Computer and Information Science, June 2021. Major in software engineering and algorithms.
- Taken classes: Artificial Intelligence, Operating System in C, Web development, Network and Telecommunication, Electronic and Project management.
- President of Garage ISEP Project Pool (robotic and innovation association at ISEP Paris)

Bordeaux, France — Gustave Eiffel preparatory class — September 2016 - June 2018

- PCSI/PSI* (B.S.E in Applied Physic and theoretical mathematics (Linear algebra, analysis, vectorial geometry))

SIDE PROJECTS AND HOBBIES

- **Speech2Text OBS plugin (2022) [private]**: GPU-accelerated OBS Studio plugin allowing to generate English captions in real time from 15 different languages (powered by a fine-tuned wav2vec2 model). Remote machine acceleration is currently being studied. If successful, there could be a path toward a "pay-as-you-use" monetization scheme.
- **CSM (2022) [private]** : *Cmake Submodule Merger* is my own Cmake multi third parties build aggregator. It has been developed to ease C++ build pipelines when a lot of internal and external libraries are required.
- **FHE experiments (2022)** : Toy project that dabble into the field of fully homomorphic encryption (FHE) applied to machine learning operations. The "Concrete" FHE compiler from https://zama.ai is used (github.com/gabrielmougard/fhe-experiment).
- **1interviewparjour.com (2020)** : An online platform for coding (in Python, Golang and Rust). You receive personalized contents via emails. You also have a "smart" planning feature allowing one to schedule the mock interviews (github.com/gabrielmougard/1interviewparjour).
- **Serpens (2021)** : A ROS snake robot powered by A3C (async. advantage actor critic network) and DQN (deep Q-network) (github.com/gabrielmougard/serpens-project).
- **RapGo (2020)** : "Rap music" generator from a user voice (no AI involved) (github.com/gabrielmougard/rapGO.io).
- **GTFS (2020)** : A study on General Transit Feed Specification (how to find a path on Maps) (github.com/gabrielmougard/GTFS).
- **Greengourmet (2020)** : "Infinite" recipe generator, fridge manager and barcode scanner (github.com/gabrielmougard/greengourmet).
- **Klych- (2019)** : A photo booth with facial recognition (creepy) (github.com/gabrielmougard/Klych-).
- **AdOpinion (2019)** : Find the brand targets on twitter using Sentiment Analysis (github.com/gabrielmougard/AdOpinion).
- **LoonProject (2018)** : My own theoretical work (and codebase) on Google's LoonProject (18/20 for TIPE national prep school exam) (github.com/gabrielmougard/LoonProject).

ADDITIONAL EXPERIENCES AND AWARDS

- Live programming streamer on twitch (https://www.twitch.tv/norskegab) (when I have a glimpse of a time)
- Personal teacher: taught computer science and mathematics to people from 15 to 50 years old.
- 6-month job every summer from 2014 to 2017: helped organizing summer music festivals and strength work activities.
- Award: 212/4049 at IEEExtreme 2018.

SPOKEN LANGUAGES

- **French**: native level; **English**: C2 level (lived and worked 2+ years abroad. TOEIC: 910); **Norwegian**: A2 level; **German**: A2 level

TECHNOLOGICAL SKILLS

- **Programming languages**: Golang, Python, C++, C, Cmake/make, Rust, Java, Javascript (Reactjs/Angularjs/Nodejs), SQL, Bash, Swift
- **Tools**: (*Version control*) Git; Gerrit; Phabricator; (*Project management*) Jira; Confluence; (*DevOps*) Docker; Kubernetes; Apache Mesos; (*Continuous Integration*) Jenkins; (*Big Data*) Apache Kafka; Elasticsearch; (*Frameworks*) ROS; Django; Flask; Symfony; (*Observability*) Prometheus; Grafana; (*Distibuted tracing*) Opentelemetry; Jaeger; (*Physic Engines*) Gazebo, Unreal Engine 5
- **Artificial Intelligence**: Tensorflow (1.x and 2.x); Tensorflow Serving; Pytorch; Graphcore Poplar (https://www.graphcore.ai/products/poplar); Jax; OpenAI Gym; Numpy; Scikit Learn