Jonathan Hubermann

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Objective

Adaptive and eager experimental surgery graduate student and engineer with computer vision, full-stack, and 5G R&D experience, seeking research opportunities within an innovative clinical setting.

Technical Skills

Programming Languages and Tools:
- TypeScript | Python | Java
- Node.js | Express | React | Firebase | Flask | Jupyter | PyTorch | OpenCV | Numpy
- Docker | CI/CD Pipelines (CircleCI, Jenkins, TravisCI) | Heroku | Jira | Redmine | TDD | Git | Linux
- PostgreSQL | MySQL | MongoDB | Neo4j

Native and Fluent Languages:
- English | French | German | Hebrew

Work Experience

Research Assistant — 2023 - Present
McGill University Health Centre | Montreal, QC
- Improving general surgery outcomes and improving surgical education techniques by applying convolutional recurrent neural networks (CRNN) for intraoperative guidance systems.

Technologies: Python, Jupyter, PyTorch, OpenCV, Docker, Linux

Lead Full-Stack Developer — 2022 - Present
Waxman House | Montreal, QC
- Developing a cloud-based POS platform for a clothing rental firm, replacing paper processes.
- Deploying services via a CI/CD pipeline with custom Docker images for test and production environments.
- Improving the company's services' efficiency and quality by cutting turnaround time by 40% and reducing costs through accurate inventory tracking and analytics tools.

Technologies: TypeScript, Node.js, Express, React, PostgreSQL, Firebase Authentication, Docker, CircleCI, Heroku

Software Developer Intern — 2021
Ericsson | Montreal, QC
- Automated the collection of TCP data stream quality parameters, such as RTT and jitter, across client and server sides over a global 5G cellular network.
- Improved 5G network quality by investigating relationships among quality parameters using decision trees.

Technologies: Python, Pandas, Shell Scripting

Software Development Engineer Intern — 2020 - 2021
Lockheed Martin | Montreal, QC
- Implemented Combat Management System services for data collection and analysis into Human-Machine Interfaces on naval warships, achieving 50% faster backlog completion than planned.
- Defined software requirements specifications and modelled their design and architecture.

Technologies: Java, JavaFX, Jenkins, IBM Rational Doors, IBM Rational Rhapsody

Teaching Assistant (TA) — 2018 - 2019
Vanier College Department of Physics | Montreal, QC
- Supplemented lecture and lab curriculum instruction in Mechanics course for college students.

Education

Master of Science (Thesis) — Experimental Surgery — 2023 - Present
McGill University — Montreal, QC

Bachelor of Engineering — Software Engineering Coop — 2019 - 2023
Concordia University — Montreal, QC
- CGPA: 3.81/4.00 | 3.97/4.30

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Projects

Object Detection with Real-Time YOLOv5 Model
Surgical tool localization and classification model along with a comprehensive report completed within 36 hours
— Annotated 176 frames with 338 classed bounding boxes of surgical tools to fine-tune the YOLOv5 model.
— Achieved a mean average precision at 50% IoU (mAP50) of 91.3% within very limited time.
Technologies: Python, Jupyter, PyTorch, OpenCV

Rush Hour Game AI Solver
Artificial intelligence course competition to write a Python script that interprets and solves any given configuration
— Utilized Numpy to implement the game logic and State Space Search solver with three search algorithms (Uniform-Cost Search, Greedy Best-First Search, A/A* Search) and four different heuristics.
— Third place winner for the shortest search path and fastest execution time in course of over 160 students.
Technologies: Python, Jupyter, Numpy

Ok Zoomer
Webcam suite with live image stylization and gesture overlay features built for the 36-hour McGill Hackathon 2022
— Enhanced the webcam-sharing experience for users by mapping emojis to hand gestures in real-time.
— Captured over 6000 images to form a dataset used to train our hand gesture classifier.
Technologies: JavaScript, React, Python, Flask, Jupyter, PyTorch

RUOK (Are You OK)
Desktop-emulated mobile application and external inertial measurement unit (IMU) device with embedded microcontroller that improves bicycling safety through preventative features and real-time functionalities
— Developed an algorithm for real-time detection of bike falls using accelerometer and gyroscope data.
— Designed a sobriety and alertness test that determines the user's capacity to operate a bike at night, translated it to JavaScript and surveyed inebriated individuals online to collect data on its effectiveness.
Technologies: C++, Arduino, Java, Processing, JavaScript

iSight
Mobile application completed within 24 hours during the McGill Artificial Intelligence Hackathon 2020
— Deployed a real-time skin lesion disease detection app with an API service on Flask and classified patients based on their risk factor using deep ensemble uncertainty modelling.
— Awarded prize for Second Overall and Best Social Good project.
Technologies: Python, Flask, Jupyter, PyTorch, MySQL, Java, Android

Snowflake
An Instagram-esque photo and message sharing web app built with the Django framework and React
— Led a five-person team throughout the SDLC, established project coding conventions and prepared instructional guide to utilizing version control systems for the benefit of team members.
Technologies: Python, Django, JavaScript, React, MySQL, TravisCI

Ragdoll Physics Simulation
Desktop GUI simulation of 2D classical mechanics physics and the kinematic effects of forces and accelerations
— Implemented the Verlet integration algorithm for modelling position changes and the Separating Axis Theorem algorithm for collision detection between ragdoll objects.
Technologies: Java, JavaFX

Awards & Accomplishments

— Winner of the **Octas "Prix en Jeunesse" Action TI Award**, an award for the best youth in technology in Quebec
— Concordia University Faculty of Engineering & Computer Science Innovation **Scholarship**
— Winner of **Second Overall** and Best Social Good project at McGill University **AI Hackathon**
— **Concordia University Award** for Outstanding Achievement In Electrical & Computer Engineering
— Certified in Standard First Aid and National Lifeguard (NLS), Snowboard Instructor (CASI)