Ross Roessler

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Portfolio: rossroessler.com

PROFESSIONAL SKILLS

Programming Languages:
Java (advanced)
Python (proficient)
Javascript (proficient)
C++ (prior experience)

Applications:
AWS Cloud Services
[DynamoDB, SQS, Kinesis],
Spring, Google Firebase, Pyspark,
Pytorch, Selenium, Tensorflow

General Skills:
Databases (SQL and NoSQL),
Object-Oriented Design, React,
Machine Learning, Signal
Processing, NumPy, scikit-learn,
Large Language Models, Agile,
Git, UNIX, Continuous
Deployment, Test Driven
Development, Android, SOA,
JUnit, REST, Microsoft Office

Languages:
English (native)
Japanese (B2)
German (B1, studying)
Mandarin Chinese (A2)

I have seven years of professional experience as a backend Software Development Engineer. I want to move my career to industry research, and am pursuing a Master's Degree in Computer Science at ETH Zürich. My interests are in Computer Vision, Signal Processing, and Health Care Applications.

WORK EXPERIENCE

Forward Deployed Engineer, Palantir Technologies   2021.05 - 2023.06
- Designed and implemented data pipeline and apps for a Fortune Top 20 Company deciding which products to place on shelves, with an estimated revenue increase of several million dollars a year
- Worked with customers to identify and build valuable workflows, including data ingestion, transformation, building initial UIs; then training customers on maintaining, improving, and taking over all parts of the system
- Built various demos for customer outreach, generating mock data and quickly building UIs and iterating
- Built an end to end PySpark testing system to allow for comprehensive integration tests of relational datasets
- Created a LLM-powered content search and summarization prototype

Software Development Engineer, Amazon.com   2013.09 - 2017.11
Corporate Gift Cards Vancouver, BC
- Implemented Machine Learning data pipeline to help detect and prevent fraudulent Gift Card usage
- Designed and implemented data ingestion and transformation APIs across multiple teams' codebases using Spring, Hibernate, and AWS
- Drove security reviews and optimized DB queries for several fraud monitoring applications
- Led team learning initiatives, including book club and patent sessions

Amazon Devices (Amazon Lab126) Seattle, WA
- Developed one handed shortcuts called "Gestures" for the Fire Phone
- Implemented several Android apps and services for data collection, testing, demos, and a Gesture event system
- Learned and used various Machine Learning algorithms; performed feature engineering and data analysis

EDUCATION

Masters of Science in Computer Science ETH Zurich   2023.09 - present
- Major: Machine Intelligence • Minor: Computer Graphics • GPA: 5.4 / 6.0

Relevant Course Projects:
- Built a Mixed Reality application to localize a user indoors using Hierarchical Localization and COLMAP
- Optimized a SOTA diffusion model to generate realistic human motions in a real-world environment with obstacles
- Implemented custom signal processing algorithms for predicting heart rate and activity type from wearable device data, scoring in top 20% of class
- Implemented segmentation algorithm for MRI data

Relevant Coursework:
Computer Vision, ML for Health Care, Mathematical Foundations of Computer Graphics, Mobile Health and Activity Monitoring, Probabilistic AI

Bachelor of Science in Computer Engineering University of South Carolina, USA   2009.09 - 2013.05
- Overall GPA: 4.0/4.0, highest possible
- Summa Cum Laude with Honors from the Honors College
- GRE: 170/170 Quantitative (96th percentile), 169/170 Verbal (99th percentile), 5/6 Writing (91st percentile)
- Capstone Project: in a team of four, built an Android app with three games to teach students geography
- Minor: Entrepreneurship
- Additional Courses: Intro to Machine Learning (Coursera), Machine Learning with Big Data (Coursera)

High School Diploma Worcester Preparatory School; Berlin, MD, USA   2005.09 - 2009.05
- Overall GPA: 99.5%, salutatorian
- National AP Scholar: Scored a perfect 5/5 on 7 Advanced Placement exams for college credit and one 4/5
- 2380/2400 SAT exam (99.94[th] percentile): 800/800 Math, 780/800 Verbal, 800/800 Writing

RESEARCH EXPERIENCE

Crop Yield Prediction using Data Assimilation Kora Labs; Zürich, Switzerland   2025.03 - 2025.09
- Implemented Data Assimilation algorithm by combining physical crop models with satellite data, using an Ensemble Kalman Filter to model uncertainty
- Implemented generic calibration and assimilation pipeline capable of easily running any crop or crop model
- Integrated predictions and features with full ML pipeline, resulting in a ~7% relative improvement in accuracy

Linear Language Models and their Memory Limitations Class Project; ETH Zürich   2025.03 - 2025.05
- Replaced standard self-attention in Transformers with linear and recurrent layers inspired by RNNs
- Measured memory capacity and learning of models across synthetic benchmarks of variable length

Autonomous Computing Internship University of Kassel; Kassel, Germany   2011.05 - 2011.08
- Participated in the DAAD RISE (Research Internships in Science and Engineering) summer program
- Programmed autonomous robots in a team of 10 people to compete in the RoboCup Mid Size Soccer League
- Implemented algorithms for penalty kick and corner kick behaviors

HONORS AND AWARDS

- *Patents.* Twelve issued patents with the USPTO.
  - Tilt Gesture Detection (US9354709B1)
  - Handedness determinations for electronic devices (US10082936B1)
- *South Carolina Professional Engineers' Award in Computer Engineering (2013).* Awarded yearly to one graduating senior showing academic excellence in Computer Engineering.
- *DAAD RISE Scholar (2011).* Competitive summer program where approximately 15% of applicants receive a stipend to perform research under a mentor in Germany.
- *McNair Scholarship (2009).* Awarded to 20 incoming freshmen at USC covering full tuition, room and board.
- *Wilson Scholarship in Computing (2009).* A $3000 academic scholarship awarded to incoming freshmen with strong academic records and leadership experience.
- *Northrop Grumman Engineering Scholarship (2009).* A $10,000 academic scholarship given to 23 students in Maryland demonstrating a strong academic background and intending to pursue an engineering career.

ADDITIONAL WORK EXPERIENCE

Full Stack Developer, Language Learning Flashcards *[Personal Project]*   2019.05 - 2020.08
- Independent project; implemented a full-stack webapp using Python, React JS, and Google Firebase
- Developed algorithm to estimate a user's vocabulary and create personalized flashcards for language learners

Supplemental Instruction (SI) Leader University of South Carolina; USA   2012.08 - 2013.05
- Led three tutoring sessions per week for students in an introductory level Java programming course
- Created my own lesson plans; engaged students with collaborative peer learning and creative questions