FADI AL-KHOURY

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I am an experienced software developer and can help your organization within these themes:

- Full stack MVP development, including use of LLMs

- Algorithms research and development

- Software design and architecture

- Coding in Javascript, Python, and C++

- Front-end web development with React.js

- Back-end development with AWS

SKILLS

Programming languages	C++, Javascript, C#, MATLAB, Python, Bash, HTML, CSS, SQL, LaTeX
Frameworks, tools, etc.	Node.js, React.js, Gatsby.js, Git, CMake, Conan, Google test, Blender, Unity, Jira, Confluence, BitBucket, AWS
Spoken languages	English, German (B1), Arabic

EXPERIENCE

Camelot Innovative Technologies lab — *November 2021 - July 2023*
Senior Software Developer — *Munich, Germany (fully remote)*

- Backend development for supply chain planning software

  Key technologies: C++17, Catch2 (unit testing), Docker

VAIVA GmbH (formerly Automotive Safety Technologies) — *February 2018 - November 2021*
Algorithm Developer — *Gaimersheim, Germany*

- Developed a C++ trajectory prediction library for highway autonomous driving within a large VW project. The library predicts the future kinematic states of vehicles, considering road geometry, vehicle interactions, traffic rules, and other factors.

  Key technologies: C++14, Google Test (unit testing), ADS2 (integration testing), IBM Rational Rhapsody (Software design), Python (scripting and concept prototyping), OpenSceneGraph (visualizations)

- Hosted technical workshops: C++ templates, and C++ custom memory management

- Developed a prototype Unity UI for visualizing driver and passenger states.

  Key technologies: C++, C#, Unity, ADTF (integration testing)

- Maintained a physics-based trajectory prediction library, written in C, which predicts vehicle motion based purely on kinematics.

  Key technologies: C99, Google Test, Matlab (concept prototyping)

KTH Mechatronics and Embedded Control Systems   *June 2017 - January 2018*
Research Engineer   *Stockholm, Sweden*

- Developed simulations and prototyped algorithms for autonomous emergency braking and path planning.

- Developed automations for generating scenarios and running tests of autonomous driving algorithms.

  Key technologies: Matlab, Simulink, PreScan (vehicle simulations)

KTH Traffic Simulation & Control Laboratory   *February 2016 - November 2016*
Research Assistant   *Stockholm, Sweden*

- Performed research and developed algorithms for optimizing traffic lights timing control

  Key technologies: fuzzy logic, genetic algorithms, Python, SUMO (traffic simulations)

- Performed research and developed algorithms for predicting the required time for vehicles to travel from source to destination points.

  Further information: link to article

  Key technologies: Kalman filtering, Matlab

SIDE-PROJECTS

Fisim - personal finances simulator
Fisim simulates the effects of cash flows, loans, and taxes, and produces transactions over a specified time period.

Live demo: `https://fadialkhoury.com/fisim`

Used technologies: C++, React.js, AWS

Anna Sprachbot
The aim is to create a chatbot that helps with learning German. An initial prototype was made which only keeps track of unfamiliar words for later repetition.

Live demo: `https://fadialkhoury.com/langbot`

Cloudrender - 3D rendering on the cloud

Cloudrender is a command-line tool that renders 3D Blender models on the cloud with AWS EC2.

Further information: link to article

Used technologies: linux command line (bash), AWS

Cross-account CI/CD with AWS

This is a CI/CD solution for a multi-account setup in AWS. I have used this solution extensively in my personal software development.

Further information: link to article

Used technologies: linux command line (bash), AWS

EDUCATION

KTH Royal Institute of Technology, Sweden *August 2015 - August 2017*
M.Sc. in Embedded Systems

Program focused on the development of embedded control systems for applications in mechatronics and robotics. My thesis was on the safety of learning systems in autonomous driving.

key content: control, signal processing, machine learning, computer vision, robotics algorithms

American University of Sharjah, United Arab Emirates *February 2011 - January 2015*
B.Sc. in Electrical Engineering

American style degree with a broad coverage of electrical engineering topics.

key content: circuits, control, power systems, electromagnetics, communication systems, digital signal processing

PUBLICATIONS

Fadi Al-Khoury. Safety of machine learning systems in autonomous driving. Master's thesis, KTH, School of Industrial Engineering and Management (ITM), 2017.
online: http://kth.diva-portal.org/smash/record.jsf?pid=diva2%3A1158738

Xiaoliang Ma, Fadi Al Khoury, and Junchen Jin. Prediction of arterial travel time considering delay in vehicle re-identification. Transportation Research Procedia, 22:625–634, 2017.
online: http://www.sciencedirect.com/science/article/pii/S2352146517301928

ONLINE PROFILES

Personal site	https://fadialkhoury.com
LinkedIn	https://linkedin.com/in/fadialkhoury
GitHub	https://github.com/fadi-alkhoury
Medium	https://fadiak.medium.com
Facebook	https://facebook.com/fadi1.alkhoury
Twitter	https://twitter.com/fadi1_alkhoury