Thomas Grapentin

Details

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DATE OF BIRTH

21.05.2001

Skills

High-level programming: Java, Python, C++, TypeScript

Low-level programming: x86 Assembly Language, PL/I

Functional programming: Scheme (Lisp dialect)

(REST) API Development (SpringBoot)

Frontend development (Angular, React)

Data Science: Machine Learning, Statistics, SQL

Algortihms and Data Structures

MS Office, Azure, LaTex, GIT

Mathematical modelling

Analytical Thinking, Quick Grasp

Hobbies

Kung Fu, Chess, Meditation

Languages

German

Profile

I am a highly curious student of Computer Science, Math, and Physics with a deep interest in Differential Geometry/Topology. Alongside my academic pursuits, I have a strong background in full-stack development and data science.

I am seeking to combine my passion for math and coding and am convinced that SGI is a perfect fit.

Employment History

Fullstack Developer , SAP, Berlin/Potsdam

JANUARY 2024 — PRESENT

Role Overview: Contributing to the development of a prototype for a Composable Process Platform (CPP) allowing to compose business capabilities in BPMN-like manner and making them executable.

Technical Responsibilities:

- **Frontend Development:** Implementing user interfaces using React and TypeScript, ensuring a responsive and intuitive user experience.
- **Backend Development:** Designing and developing backend services using Java and Spring Boot, focusing on robust architecture and scalability.
- **Data Modeling:** Utilizing SAP Cloud Application Programming (CAP) model for effective data structuring and management.
- **Data Persistence:** Managing data storage solutions with MySQL and EventStoreDB to ensure efficient data retrieval and processing.
- **Process Orchestration:** Implementing process orchestration using Temporal for streamlined workflow management.
- **API Testing**: Conducting comprehensive API testing using Bruno, ensuring seamless integration and functionality across services.
- **Automated Testing:** Conducting frontend and backend testing with Cypress to enhance application reliability and performance.
- **Cluster Management:** First experience with Kubernetes

Data Science and Advanced Analytics, KPMG, Berlin

FEBRUARY 2023 — DECEMBER 2023

Project awarded "Best of Consulting Award" by Wirtschaftswoche for innovation in AI-driven manufacturing processes.

Project Scope: Development of the world's first industrial AI-assisted Shot Peening software, designed to automate and optimize rocket tank production.

Technical Responsibilities: Collaborated within an agile team, focusing on machine learning and mathematical modeling.

- Led the conceptualization and implementation of efficient algorithm to automate and optimize the production process through mathematical optimization.
- Utilized Geometry Processing Libraries in Python to extract and generate feature sets for machine learning models, enhancing prediction accuracy and reliability.
- Developed and optimized REST APIs with caching mechanisms to seamlessly integrate software components, boosting overall performance and scalability.

- Automated data analysis and visualization pipelines to deliver actionable insights, improving data-driven decision-making across production stages.

Java Backend Developer, KfW, Berlin

JANUARY 2022 — DECEMBER 2022

Role Overview: Contributed to the development of internal banking software within an agile SCRUM team, focusing on enhancing operational efficiency and user experience.

Technical Responsibilities:

- Primarily engaged in back-end development while also contributing to web application development using Java Servlets.
- Migration of legacy PL/I code to modern Java, improving maintainability and performance.
- Gained hands-on experience working with mainframe systems, ensuring seamless integration with contemporary applications.
- Utilized Hibernate and XStream for effective database integration and data transformation, optimizing data handling processes.
- Implemented document generation solutions using iText and Aspose, automating workflows and improving document management.
- Collaborated with tools such as Maven, Jenkins, and Git for build management, continuous integration, and version control, enhancing the development lifecycle.

Freelance Software Developer, Sneakinn Laundry, Gurgaon, India

FEBRUARY 2022 — MARCH 2022

Project Scope: Independently conceptualized and developed a Route Optimization Software in Java to streamline the delivery process for sneaker logistics.

Technical Responsibilities:

- Designed algorithms to efficiently assign pick-up and delivery locations to drivers based on the number of available drivers, utilizing graph clustering techniques.
- Implemented route computation for each driver using Traveling Salesman Problem (TSP) heuristics, ensuring optimal pathfinding and minimal total delivery time.
- Employed pre-computation and iterative methods to achieve an evenly distributed workload among drivers, enhancing operational efficiency.
- Developed a Route Optimization Visualizer to illustrate key algorithms and their performance metrics, available at Route Optimization Visualizer.

Private Tutor, Optimal Nachhilfe

JUNE 2021 — DECEMBER 2021

Courses Taught:

- **Algorithms and Data Structures 1-2** (Java): Guided students through core concepts and practical applications.
- **Computing 1-2** (C++): Developed foundational programming skills and problem-solving techniques.
- **Engineering Project:** Supervised projects using TypeScript, Angular, Express.js, MongoDB, and Python, fostering hands-on experience with modern technologies.

- **Thesis Supervision:** Mentored student on thesis, with a focus on REST APIs in Healthcare Informatics, utilizing the FHIR standard and HAPI FHIR library.
- **Mathematics:** Instructed students in Linear Algebra and Higher Mathematics 1-2, ensuring a solid mathematical foundation.
- **Physics 1:** Provided comprehensive tutoring in fundamental physics concepts.
- **Physical Chemistry:** Explained complex topics to improve student comprehension and application.

Math Tutor for Physics Students, Humboldt-Universität-zu-Berlin, Berlin

APRIL 2021 — JUNE 2021

Led the math introduction course for incoming physics students. Focus on linear algebra and differential equations.

Founder and manager of the school firm Cash4Good(s), Berlin

MAY 2017 — MAY 2019

Founded and managed an internal school firm that operated a second-hand trade and service mediation.

Education

M.Sc. Mathematics

OCTOBER 2024

Specialization: Differential Geometry/Topology and Mathematical Physics

I recently started a blog to share my passion and to make the fascinating world of mathematics more accessible.

B.Sc. IMP (Computer Science, Math, Physics), Humboldt-Universität-zu-Berlin, Berlin

OCTOBER 2019 — PRESENT

Program Overview: This unique four-year program (240 ECTS) has been offered exclusively at HU Berlin since the winter semester 2019/2020, providing students with a broad interdisciplinary foundation in mathematics, physics and computer science.

Specialization: Differential Geometry/Topology

Thesis: Recently submitted my thesis titled "Seiberg-Witten Theory and the Differential Topology of 4-manifolds" which gives an overview of 4-manifold topology and the interplay between topology and physics, particularly in relation to Donaldson and Seiberg-Witten theory followed by a comprehensive introduction into Seiberg-Witten theory.

Abitur, Werner von Siemens Gymnasium, Berlin

2011 — 2019

Program for gifted students. Every week: 4 days normal schooling, one "project-day".