



EXECUTIVE SUMMARY

As an internationally acclaimed senior AI engineer, I am dedicated to delivering timely, cost-effective solutions that drive business success. My expertise bridges technology and business, demonstrated by my proven track record in leading and managing multi-disciplinary teams from product conceptualization to successful launch. I excel in complex, fast-paced environments, consistently ensuring exceptional outcomes and helping clients thrive in today's competitive business landscape.

- **Technology:**

Developing software from the age of 12, I advanced my coding skills through a formal education in computer science, followed by my studies in engineering & economics at University of Technology in Graz, Austria.

My focus since 2017 has been on applied artificial intelligence, developing a deep learning computer vision framework from scratch in python for my BSc-thesis.

For my MSc-thesis, I conducted research on high-dimensional embedding space AI models, utilizing clustering algorithms for blind acoustic source separation at University of Auckland, New Zealand.

- **Business:**

With a solid foundation in engineering and economics, I founded an AI company called clir.ai, which received €300.000,- in funding, was granted a Patent and now serves thousands of users monthly addressing hearing impairment issues.

My entrepreneurial achievements earned me a spot on Forbes' 30 Under 30 list in 2022. Over the past 16 years, I have held various roles, including as a Data Scientist & Software Developer for major automotive suppliers, Project Manager at Neuroth, and Lead Machine Learning Engineer at Kickscale. Furthermore, I have independently developed and launched several successful mobile apps.

This extensive experience enables me to offer comprehensive, well-founded and outcome-driven services across Industries in the fields of AI, IT security and business strategy.

RELEVANT PROJECTS

Selection of Technology Projects		Sector	Duration
1.	Customer Service Agent Platform Design and full-stack implementation of an agentic API to support customer service use cases; Implementation of a RAG system and web-based admin portal with CRUD functions for the vector store. <i>Tech: python Fast-API, react, liteLLM, GitHub, cursor, Docker, SQL-Alchemy, PostgreSQL, Linux Server, jwt</i>	SaaS	Jun 25 – Sept 25
	Agent-based Task automation System-design and full-stack implementation of a consumer facing application for task automation using LLM Agents; Implementation and deployment of a full backend API including user authentication and handling; Data model design & CRUD-database implementation; Implementation of a web-based admin dashboard. <i>Tech: Swift, python Fast-API, OpenAI-API, GitHub, cursor, Docker, SQL-Alchemy, MySQL, Linux Server, jwt, langchain</i>		
	RAG: Design & Implementation of a Legal Domain Expert System based on Vector-database and LLM technology stack Research, analysis and selection of state-of-the-art vector store technologies; Design of tech-stack based on objective KPI's;		

Implementation of an AI backend using FastAPI, Milvus & Django to analyse legal documents and give recommendations and direct suggestions for improvements based on client's custom domain knowledge base; Full unit-test coverage of the codebase; Development of novel algorithms, especially splitters, and subsequent vectorisation of said knowledge base; Quantitative analysis and comparison of improvements achieved. Increase in system accuracy from ~70% using existing solutions to over 95% using custom developed algorithms; Implementation of confidence-scoring system to predict likelihood of speculative or even hallucinated answers.

Tech: python, Fast-API, OpenAI-API, Huggingface, GitHub, Llama, Docker, Django, pandas, cursor, SQL-Alchemy, Postgres, pydantic, pytest, unittest, celery, jwt

4.	<p>RAG: Design & Implementation of Semantic Search Platform</p> <p>Implementation of SotA-security conforming search-backend using advanced Retrieval Augmented Generation approach based on local LLM-embeddings. Conducting stress-tests simulating many parallel user requests. Delivered before-time and under-budget.</p> <p><i>Tech: python, LlamaIndex, FastAPI, Huggingface, GitHub, Pytorch, OpenAI-API, Llama3, Docker, Terraform, Google Cloud Platform</i></p>	SaaS	Feb 24 – Jun 24
5.	<p>Streaming LLM chat-responses – secure front end integration</p> <p>Assessment of the security architecture of a streaming chat-interface as well as implementation of SotA security features using https, wss and JWT. Implemented a modular authentication architecture for easy integration and switching of authentication services.</p> <p><i>Tech: python, JavaScript, React, Firebase auth, FastAPI, Json Web Token, asymmetric cryptography, digital signatures, Docker, terraform</i></p>	SaaS	May 24 – Jun 24
6.	<p>LLM hosting</p> <p>Hosting of Llama3 models, saving significant cost, supporting scalable, concurrent usage.</p> <p><i>Tech: python, LLM, Llama3, HuggingFace, RunPod, pytorch, Docker, GitHub, fastAPI, vLLM, terraform</i></p>	AI	Jan 24 – Jun 24
7.	<p>RAG based platform “DocChat”</p> <p>Designed & implemented a RAG chatbot solution for interactive QnA with company documents, information retrieval and fast document localization. The most important development target was guard railing (i.e. protecting against generating undesired, unprofessional or simply false responses) and secure data access via user-specific permission management.</p> <p><i>Tech: python, LLM, OpenAI API, RAG, flask, SQL, Azure, AWS, Django</i></p>	AI	Oct 23 – Jan 24
8.	<p>AI-based Call Assistant</p> <p>Designed & implemented automated business meeting assistant using local transcription via Whisper3 and utilizing AI based text processing and text generation; deployed application in scalable Azure infrastructure. Front-end development using Swift on MacOS.</p> <p>Project responsibilities: Conceptualization, Design & Development, User-management, Integration of OpenAI API</p> <p><i>Tech: python, Swift, MacOS, LLMs, Advanced Prompt Engineering, Open AI, AWS, Git, GitHub, Azure Machine Learning, Azure App Service Plan, Docker, flask, whisper text2speech, AWS</i></p>	AI	Jan 23 – Oct 23
9.	<p>Custom Audio Driver</p> <p>Developed a customized audio driver on MacOS using C for customizable audio routing, recording and processing in real-time.</p> <p><i>Tech: swift, C, AVFoundation, AudioKit</i></p>	Telecom	Sep 23 – Dez 23
10.	<p>AI integration on custom chip architecture using embedded C</p> <p>Customized a real-time capable AI model on a partner's embedded platform using python and embedded C.</p> <p><i>Tech: python, tensorflow, pytorch, Onnx, embedded development, C</i></p>	Semi-Conductors	July 23 – Oct 23

11.	Implemented voice activity detection for automatic speech recognition <i>Tech: python, swift, C++</i>	SaaS	Jan 23- Dec 23
12.	Converted transformer-models from pytorch to tensorflow <i>Tech: python, tensorflow, pytorch</i>	AI	Jan 23- Dec 23
13.	Video Processing App for acoustic source separation <i>Tech: python, tensorflow, tf-lite, swift, iOS AVFoundation Framework</i>	SaaS	Jul 22 – Jan 23
14.	Advanced 1D-convolutions for real-time signal processing Built a customized 1D-convolution-layer in tensorflow for efficient, parallel execution during training and sequential execution during inference, improving the speed of a single forward-pass by 100x from 70ms to 0,7ms while maintaining training speed. <i>Tech: python, Tensorflow, numpy, time-series processing, pytorch</i>	AI	Jan 21 – Jun 21
15.	Patent granted for BLE-based distributed AI inference <i>Tech: python, C/C++, Bluetooth Low Energy</i>	IP	Oct 20 – Aug 22
16.	Implemented Graph-Convolution Models for automatic 3D modelling <i>Tech: python, pytorch, scipy, numpy, proprietary 3D modelling software</i>	Healthcare	Jun 20 – Sep 21
17.	Separation of variable number of sources in a single-channel signal <i>Tech: python, pytorch, numpy, matplotlib</i>	AI	Apr 19 – Apr 20
18.	Speech Enhancement Developed a speech separation neural network model separating human voices and noise – enabling hard-of-hearing users to have high quality conversations in noisy spaces in real time. Achieved less than 8ms latency and deployed the model to production with very high user ratings (4.8 and 5 out of 5 stars respectively across two apps). <i>Tech: python, pytorch, tensorflow, tf-lite, scipy, numpy, matplotlib</i>	AI	Feb 19- Jan 21
19.	Developed a route planning algorithm for Tesla Inc. The task was to find the fastest route through the North American Supercharging network (travelling salesman problem) from any given location to any other, based on state of charge of the vehicle, available chargers and charging-speed, that lowered route-cost according to Tesla's cost-calculation compared to their benchmark. <i>Tech: C++, python</i>	Automotive	Jul 18- Sep 18
20.	Developed neural network model for SotA traffic sign recognition Using an ensemble of CNN-based models trained using a variation of augmentation techniques applied to the training data. <i>Tech: python, tensorflow, scipy, numpy, matplotlib, Pillow</i>	AI	Jun 17 – Dec 17
21.	Developed time series classification model for driving maneuver recognition Implemented LSTM based neural network approach to detect a variety of driving maneuvers in highway driving simulations. <i>Tech: python, pytorch, scipy, numpy, client's proprietary simulation software</i>	Automotive	Apr 18 – Jun 18
22.	Built algorithm to recursively detect and localize reference loops <i>Tech: swift, Objective C</i>	SaaS	Jan 15 – Jun 15

Selection of Business Development & Innovation Projects		Duration
1.	Led a team of four people to successfully conduct a € 350.000,- research project.	Dec 21 – Apr 24

2.	Coached and mentored multiple teams in workshops to improve their presentation skills for a pitch-competition. All teams made first or second place in their competition.	n.A.
3.	Consulted startups on AI Business Strategy	n.A.
4.	Won multiple Pitch Competitions, including Startup World Cup 2022 in the Biotech category	2020 - 2022
5.	Detailed process analysis of manufacturing and design workflows in the production of a medical device	Jun 20 – Sep 21

SKILLS

Technical		
•	Programming & Script Languages	Python, C, C++, C#, Java, Javascript, React, Typescript, SQL, swift, Objective C
•	IDE	Visual Studio Code (VSCode), Jupyter Notebooks, Jupyter Lab, Eclipse, LMStudio
•	Libraries	pandas, pyTorch, TensorFlow, scipy, Pillow, numpy, plotly, matplotlib, Django, Flask & FastAPI, azureml, regex, Langchain, llamaindex, sqlalchemy
•	Cloud	Microsoft Azure (Azure Machine Learning, Azure App Service Plan, Identity Management), AWS, Google Cloud, Django, FastAPI, Flask, Terraform, Docker, Kubernetes
•	Databases	Google Firebase, Google Firestore, SQLite, ChromaDB, MySQL, MS SQL Server, Postgre SQL
•	Other	iOS App Development, Linear Programming, REST-API, OpenAI API, Prompt Engineering, RAG, LLM Fine-tuning, LLM hosting, Excel, OAuth, Word, PowerPoint, Keynote, Windows, Linux, Mac, GitHub, GitLab, Huggingface
Innovation / Business Development		
•	Ideation	Design Thinking, Customer Discovery Interviews, Miro/Mural, Business Model Canvas, Lean Canvas
•	Leadership	Hiring, Interviews, Employee Management, Project Management, Employee-Conversations
•	Idea Validation/Sales	Cold-Calling, Smoke Testing, A/B Testing, Performance Marketing, Hubspot
•	Prototyping	Webflow, Figma, Photoshop, Canva

EDUCATION

GoUSA Program by Austrian Chamber of Commerce
San Francisco | USA

Sept 2022 – Oct 2022

Stanford CS221: Artificial Intelligence online course
Graz | Austria

Sept 2019 – Dec 2019

MSc Mech. Engineering & Economics
Graz University of Technology | Graz | Austria
Wrote Thesis at University of Auckland | New Zealand

(paused)
Mar 2018 – Jun 2021
Feb 2019 – Nov 2019

BSc Mech. Engineering & Economics

Graz University of Technology | Graz | Austria

Thesis: Traffic sign recognition using Neural Networks

Sep 2013 – Dec 2017

Associate Degree in Computer Science and Management

HTL Villach | Villach | Austria

Major: Software Development | Minors: Management, Economics

Sep 2007 – Jun 2012

EXPERIENCE

AI Solutions Architect | Freelance | Villach | Austria

Jun 2024 – current

- Implementation of AI systems & strategic technology consulting

Business & Machine Learning Consultant | frossard.co | Wien | Austria

Jan 2024 – current

- Advising on AI strategy and implementing machine learning solutions.

Chief Executive Officer | clir Technologies | Graz

Jun 2021 – current

- Implementing machine learning solutions
- Project Management, Fundraising, Pitching, Business Development

Machine Learning Lead Engineer | Kickscale | Graz | Austria

Feb 2024 – Jun 2024

- Development & deployment of a vector store retrieval system

Manufacturing Automation - Project Lead | Neuroth | Graz | Austria

Jun 2020 – Sept 2021

- Analyzed & documented workflows
- Developed an AI training pipeline
- Used graph-convolution models to automate the design process

Self Driving AI Engineer | AVL | Graz | Austria

Jun 2017 – Mar 2019

- Developed AI-based Advanced Driver Assistance Systems and time-series classification and recognition algorithms using LSTM networks
- Supported the creation of detailed driving simulations
- Played a key role in client engagements, often presenting our progress and findings

QA Software Engineer | Magna Powertrain | Graz | Austria

Mar 2015 – Mar 2017

- Increased administration efficiency by digitizing employee management process and aligning key stakeholders (*Microsoft Sharepoint, Javascript*)