



SOFTWARE ENGINEER · AI IN ENGINEERING · BIOMEDICAL BACKGROUND

Tomáš Repčík

✉ contact@tomasrepcik.dev

🌐 tomasrepcik.dev

📄 github.com/Foxpace

in linkedin.com/in/tomas-repcik

Slovak (native) · English (C1)



01 About me

Software engineer with five years at Siemens Healthineers, building healthcare apps for Android and iOS. Work covers Flutter architecture, native integrations, testing and delivery. Current AI work focuses on developer tooling, agent instructions and code review. Earlier university research covered ECG identity verification and sensor-based fall detection. Independent work also includes evaluating local language models for medical-result interpretation.

02 Selected research

Local LLMs for medical-result interpretation

Independent applied-AI research · 2026

- Evaluated 20 small models on 118 manually validated synthetic blood-test cases across three task levels and three processing pipelines. Schema/tool-calling achieved 84.4%, 63.8% and 75.5% exact match by task level.
- Analyzed extraction and interpretation failures. Benchmarked throughput, memory, CPU and battery/thermal behavior on Pixel 7a and iPhone 15.

ECG biometric authentication

Master's research · Brno University of Technology · 2019 - 2021

- Compared 1D CNN and Siamese models with SVM/Random Forest for single-heartbeat verification. Thesis dataset: 80 participants, 564 measurements and approximately 19,700 heartbeats.
- Thesis CNNs averaged 98.9% true acceptance and 99.5% true rejection. Used signal attribution methods to examine predictions and compressed a model from 2,820 KB to 240 KB for mobile inference.

BeSafeBox fall and car-crash detection

Bachelor's research · Brno University of Technology · 2019

- Engineered 43 motion-signal parameters, compared PCA/ICA/NMF and trained a neural network on 3,260 records. Fall-detection accuracy was approximately 86-90%.
- Field testing covered 520+ hours and approximately 2,500 km of driving, with zero confirmed false crash alarms.

Open source: [SignalScreen](#) implements occlusion sensitivity, saliency maps and Grad-CAM for 1D TensorFlow models. Published reusable ECG R-wave detectors in Kotlin and C/C++.

03 Publication and presentations

Repčík, T., et al. [Biometric Authentication Using the Unique Characteristics of the ECG Signal](#). Computing in Cardiology, 2020, vol. 47. DOI: 10.22489/CinC.2020.321. This separate 29-subject study reported 0.57% false acceptance and 0.00% false rejection for the deep-learning method.

CodeCon 2026: [Local LLMs on smartphones for medical-result interpretation](#).

Invited sessions, STU FIT: Local-LLM medical-result evaluation, RAG and healthcare interoperability.

04 Professional experience

Flutter / Multiplatform Developer · Siemens Healthineers

September 2021 - present · Bratislava

- Started as the sole mobile developer and helped grow Patient Portal, Stroke Connect and Consent into a three-app platform supported by a full Scrum team.
- Owned Flutter application architecture in a shared monorepo, with Cubit-based MVI, reusable packages and native Kotlin/Swift integrations.
- Built a Dart CLI for versioning, localization, customer flavors and release tagging. Managed Fastlane CI/CD, accessibility and automated testing.
- Previously delivered a telemedicine app for users aged 65+, supporting 10+ vital signs. Integrated Bluetooth devices and wearable ECG, mapping measurements to FHIR with LOINC codes.
- Helped 10+ engineers use AI for testing and code review with shared instructions, skills and CLI/MCP tools. Earlier projects covered CT/PET analysis and ECG QRS detection.

Junior Researcher · CryptoMood

July - September 2019 · Brno

Built a Python algorithmic trading strategy using social and news sentiment from the CryptoMood API.

Research Intern · RECETOX

July - September 2018 · Brno

Built a Java interface for QuPath microscopy processing and large image databases.

05 Research methods and software

Data and ML: Python, NumPy, Pandas, SciPy, scikit-learn, TensorFlow/Keras, SQL, R and MATLAB.

Biomedical signals: ECG filtering, QRS detection and delineation, motion signals, PCA/ICA/NMF and CT/PET analysis.

Interpretability and deployment: Grad-CAM, SHAP, saliency, occlusion sensitivity, TensorFlow Lite, PydanticAI, LangExtract and llama.cpp.

06 Education and awards

Brno University of Technology

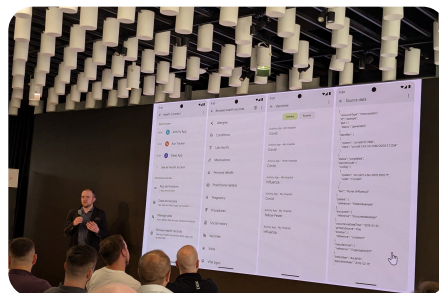
Biomedical Engineering and Bioinformatics

- Master's degree, Ing., 2019 - 2021. Thesis on ECG biometric authentication.
- Bachelor's degree, Bc., 2016 - 2019. Fall-detection thesis won the EEICT biomedical engineering category and Best Bachelor Thesis 2019 at BUT.

ISAQB CPSA-F: Certified Professional for Software Architecture, Foundation Level.



CodeCon 2026 · Local LLMs



Health Connect + FHIR



Invited sessions · STU FIT