

Tihamer Toth

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Profile

Software developer with more than a decade of experience designing and developing distributed systems, computer vision applications, embedded software, and high-performance C++ services.
Strong background in modern C++, GPU-accelerated inference, video processing, custom communication protocols, and Linux-based systems. Experienced in designing software frameworks, plugin architectures, microservices, and hardware-integrated solutions running in production environments.

Professional Experience

Heruon Ltd. **Bangor, United Kingdom**

Senior software developer

February 2020 – Present

- Designed and developed distributed computer vision systems for face detection, face recognition, and event processing.
- Implemented C++ microservices communicating through custom TCP/UDP protocols.
- Developed an event processing platform responsible for collecting, tracking, and forwarding events between distributed services.
- Designed and implemented a facial recognition platform supporting multiple inference backends including TensorRT, TensorFlow, Caffe, and MXNet.
- Implemented dynamic batching and GPU-accelerated inference pipelines for efficient processing of video analytics workloads.
- Developed custom C++ libraries and infrastructure components to reduce external dependencies and maintain control over critical system functionality.
- Designed and maintained a dynamically extensible plugin architecture allowing services and components to be loaded and configured at runtime.
- Developed video analysis tools for face detection, tracking, and quality assessment.
- Worked extensively with CUDA, TensorRT, OpenCV, FFmpeg, and V4L2.
- Implemented fault recovery, automatic reconnection, and service resilience mechanisms across distributed components.
- Participated in architecture design, code reviews, debugging, and technical leadership activities.

Adaptive Recognition Hungary Zrt. **Budapest, Hungary**

Software developer

August 2013 – February 2020

- Designed and developed software for intelligent transportation, traffic enforcement, and parking management systems.
- Implemented embedded camera systems capable of road surface analysis, traffic sign detection, and GPS-based event association.
- Developed number plate recognition and vehicle speed measurement systems.
- Designed and implemented a modular device integration framework supporting cameras, radars, lasers, and other hardware devices through dynamically loaded plugins.
- Developed custom communication protocols and networking components using TCP, UDP, and serial interfaces.
- Designed and implemented distributed event storage, forwarding, and load balancing services.
- Developed and maintained parking management systems integrating barrier gates, cameras, and external control devices.
- Worked with PostgreSQL, MySQL, MariaDB, MongoDB, and Redis.
- Developed software for Linux and embedded ARM-based platforms, including cross-compilation and platform-specific optimization.
- Integrated hardware devices and sensor modules using GPIO, GPS, serial communication, and network protocols.

Technical Skills

- Programming languages: C, C++, Python
- Modern C++ (C++11/14/17/20): Template metaprogramming, Multithreading, Asynchronous event-driven systems
- System design: Distributed systems, Design patterns, Microservices, Plugin architectures, Event-driven systems, Clean code
- Computer vision and AI: CUDA, TensorRT, TensorFlow, Caffe, MXNet, OpenCV
- Platforms and infrastructure: Linux, Ubuntu, Docker, Kubernetes, ARM platforms, NVIDIA Jetson, Raspberry PI
- Video processing: FFmpeg, V4L2, Hardware video encoding and decoding, RTSP / RTP streaming
- Databases: PostgreSQL, MySQL, MariaDB, MongoDB, Redis
- Hardware and embedded: GPIO, Serial communication, SPI, TCP/IP networking, GPS, sensor modules
- Development tools: GDB, GoogleTest

Languages

- Hungarian – Native
- English – Intermediate
- Serbian – Intermediate

Education

Bachelor of Computer Science Subotica Tech - College of Applied Sciences Subotica, Serbia 2011