ZHENYU YE

Email: zhenyu.z.ye@gmail.com ◇ Homepage: http://zhenyu-ye.net/
Location: Amsterdam, The Netherlands ◇ Phone: upon request.

SUMMARY

◇ Commercial product development from prototyping to mass production.
◇ Optimization of computer vision and machine learning algorithms on custom hardware.
◇ Internet-of-things devices, edge and cloud platforms for machine learning applications.
◇ Implementation of electronics systems, from chip design to firmware/software stack.
◇ Integration of electronics systems into mechatronics and robotics systems.

PROFESSIONAL EXPERIENCE

Computer Vision Engineer, AM-Flow, Full Time *2024 January - Current*
◇ Automate 3D printing factory with computer vision.

Machine Vision Consultant, ams OSRAM (via TMC), Contract *2020 July - 2023 Dec*
◇ Design algorithms (detect object by color/shape/etc.) and demonstrators for smart image sensor.
◇ Design hardware-friendly high-dynamic range algorithms for future image sensors.
◇ Analyze AR/VR applications and machine learning models on resource-constrained systems.
◇ Perform modelling and optimization of camera systems for various applications.
◇ Develop Linux kernel space drivers for image sensors and bring up sensor features.
◇ Bring up a new variant of intelligent LED chip and develop firmware for new features.

Embedded Software Engineer, Bosch (via TMC), Contract *2023 April - 2023 August*
◇ Integrate Linux kernel space driver for multimedia device in conference system.

Machine Vision Expert, TMC, Full Time *2020 July - 2023 Dec*
◇ Help clients create innovative machine vision systems.

Hardware and Software Engineer, CASPAR.AI, Full Time *2019 September - 2020 May*
◇ Bring up smart home device prototypes.
◇ Build edge computing platforms supporting deep learning applications in vision domain.

Hardware and Devices Engineer, Connecterra, Full Time *2016 July - 2019 August*
◇ Commercial product development, from prototyping to mass production.
◇ Electronics, firmware, and software for wireless Internet-of-things devices at industrial scale.
◇ Optimization of neural networks for motion analysis on battery-powered devices.
◇ Edge computing platform supporting deep learning applications.

Firmware Engineer, Intel, Full Time *2014 August - 2016 June*
◇ Implementation of firmware stack for Intel Image Signal Processors (ISP).

Researcher, Embedded vision, TU Delft, Full Time *2014 April - July*
Implementation of a proprietary computer vision algorithm on FPGAs in 4 months.

PhD researcher, Embedded vision architecture, TU Eindhoven, Full Time *2009 - 2014*
◇ Design of vision algorithms and electronic systems for 1000 frames-per-second vision processing.
◇ Implementation of vision based closed-loop precision motion control.
◇ Low-power image processor architecture (Xetal-Pro).
◇ Teaching GPU architecture and programming, and assisting hands-on labs of optimizing vision algorithms on GPUs: histogram equalization (2009), stereo vision (2010), natural feature detection (2011), face detection (2012), and neural networks for object recognition (2013).

MSc project, GPU architecture & programming, TU Eindhoven, Full Time *2008 - 2009*
◇ Modeling and simulating GPU architecture. Optimize linear algebra algorithms on GPUs.

TECHNICAL SKILLS

◇ **Computer Vision**: design of hardware-friendly algorithms from scratch and from existing libraries (Matlab/OpenCV/etc.), image processing on CPU/DSP/GPUs/FPGAs and custom chip, full-system implementation of high-speed (1000 fps) imaging platform.
◇ **Machine Learning**: neural network in vision and motion domain using commercial tools such as TensorFlow(/Lite/uC) as well as custom codes, optimization of neural network on resource-constrained systems such as microcontrollers and micro-NPUs.
◇ **Internet-of-things**: battery-power wireless sensors, edge-computing platform supporting deep learning applications, firmware and software stack from device to cloud (Azure/AWS/Google).
◇ **Embedded software**: C/C++ targeting various embedded processors (microcontrollers/DSPs), single-instruction-multiple-data (SIMD) extensions of Intel/ARM/etc., programming GPUs with languages like CUDA/OpenCL/etc., real-time image processing with Python, multi-threading on multi-core processors with pthread/OpenMP/etc., real-time operating systems, scripting (Bash/etc.), Linux kernel space driver.
◇ **Electronic systems**: parallel architecture, register-transfer level (RTL) design using hardware description languages (VHDL/Verilog), high-level-synthesis (HLS) tools, FPGA toolchains, high-speed interfaces for image sensors and cameras (LVDS/CameraLink/etc.).
◇ **Mechatronics systems**: digital and analog interface (ADC/DAC), sensor and actuator interface, design of feedforward and feedback controllers, modeling and simulation (e.g., in Matlab/Simulink), performance tuning for measurement noise and delay of visual feedback.

EDUCATION

PhD (dr.) in Mechanical Engineering, TU Eindhoven, The Netherlands *2009 - 2020*
Worked on the Embedded Vision Architecture project. My thesis, titled "Implementation, Modeling, and Exploration of Precision Visual Servo Systems", was successfully defended on 26 May, 2020.

MSc. (ir.) in Embedded Systems, TU Eindhoven, The Netherlands *2006 - 2009*
Funded by TU/e scholarship, with MSc. thesis on GPU architecture and programming.

BSc., Electronic Engineering, Harbin Institute of Technology, China *2002 - 2006*
BSc. project on the implementation and optimization of digital filters on DSPs.

ADDITIONAL INFORMATION

Language skills: English, Chinese, Dutch (A2-level, genoeg voor koetjes-en-kalfjes).
Practical matters: Dutch permanent residence and work permit, Dutch driving license.