Andrew G. Gurik

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Software Engineer with 12 years of experience in embedded software and controls. Most recently building precision agriculture software systems using modern C++ and Qt frameworks.

CORE COMPETENCIES

C++	**C**	**GNU/Linux**
Matlab & Simulink	**Qt Framework**	**Git**
Embedded Systems	**Robotics**	**Classical Control Systems**
CAN/J1939/ISOBUS	**GCC**	**OpenGL**

EXPERIENCE

Ag Leader Technology — Staff Software Engineer   2018 - Present

Currently building vision-based vehicle automation using VPI AprilTag Detector on NVIDIA Jetson.

In-Cab Touchscreen Display – InCommand Go

- Led development of next-generation precision agriculture displays, implementing a 3D mapping engine using Qt3D and OpenGL in an embedded Linux environment (i.MX8 QM).
- Integrated a new 3D map engine with a legacy codebase while improving graphics performance using profiling and optimization.
- Developed custom OpenGL ES shaders to improve rendering performance and visual quality.

Liquid Application Control – L2 & RightSpot

- Developed a proprietary liquid application control system for precision agriculture sprayers.
- Implemented closed-loop pressure and flow control for servo and PWM valves.
- Designed a CAN protocol to communicate with third-party nozzle-by-nozzle systems and implemented nozzle duty-cycle control.
- Integrated with OEM vehicles over J1939 and built simulators to validate and accelerate vehicle integration.

High Speed Planting – SureSpeed

- Developed a high-speed planting system using BLDC motors (seed meter and seed tube) with proprietary sensors communicating over J1939.
- Implemented touch-based in-cab diagnostics to improve troubleshooting and operator workflow.
- Brought up a modified hardware platform (MPC5634) while maintaining compatibility with preexisting systems such as hydraulic downforce.

Randstad Technologies — Software Engineer   2017 - 2018

Caterpillar – Core Machine Software

- Built a desktop harness to run and debug embedded modules on a Windows PC.
- Integrated Simulink models, C#/C++ tooling, GTest, and a virtual CAN bus.

Caterpillar, Inc. — Software Engineer   2013 - 2016

Drivetrain Systems & Software - Large Mining Trucks

- Maintained and extended powershift transmission control software in C and Simulink, delivering feature development and bug fixes.

EDUCATION

Iowa State University — B.S. Electrical Engineering   2012

VOLUNTEER EXPERIENCE

FIRST Robotics Competition — Mentor

Team Neutrino 4H — Lead Mentor (Controls)   2012, 2020 - Present

Robot Casserole — Mechanical Mentor   2013 - 2016