Andrew Gurik

andrewgurik@gmail.com (309) 868-4405 Ames, IA

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 developing vision-based vehicle automation on an embedded NVIDIA Jetson platform.

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.
- Developed custom OpenGL ES shaders to improve rendering performance and user experience.

Liquid Application Control – L2 & RightSpot

- Developed a proprietary liquid application control system for precision agriculture sprayers.
- Designed the CAN protocol for third-party nozzle-by-nozzle control integration.
- Implemented closed-loop pressure and flow control for servo and PWM valves.
- Implemented nozzle duty-cycle controller using nozzle flow feed-forward and flow meter feedback.
- 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) and seed sensors communicating over J1939.
- Implemented touch-based in-cab diagnostics to improve troubleshooting and operator workflow.
- Used a modified hardware platform while preserving compatibility with existing features such as hydraulic downforce, clutch shutoffs, and advanced seed monitoring.

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 Windows DLLs with Simulink, custom C#/C++ tooling, GTest, and a virtual CAN bus.

Caterpillar, Inc. — Software Engineer 2013 – 2016

Drivetrain Systems & Software – Large Mining Trucks & Off Highway Trucks

- Delivered features and bug fixes for powershift transmission control software in C and Simulink across legacy and new product lines.
- Maintianed existing features using hydraulic solenoid control, J1939 communication, and speed sensor inputs while validating behavior with hardware-in-loop and software-in-loop testing.

Volunteer Experience

FIRST Robotics Competition — Mentor

Team Neutrino, Story County 4H — Lead Mentor (Controls) 2012, 2020 – Present

Robot Casserole — Mechanical Design Mentor 2013 – 2016

Education

Iowa State University — B.S. Electrical Engineering Fall 2012