

Reverse Engineering Camera-Lens Protocols

Project Description: Reverse engineering lens communication protocols to increase system compatibility. Many camera systems (e.g. Canon EOS) are compatible with a limited set of lenses made by that manufacturer. Other companies in the market are forced to reverse engineer these protocols in order to provide 3rd party lenses (e.g. Sigma, Tamron, Tokina), and many 3rd party companies either don't bother, or don't find it worthwhile (e.g. Samyang, Coastal Optics, Schneider, Cooke, SLR Magic, Venus Optics). With the transition to digital only lens settings for aperture and focus (no longer mechanically coupled) end users are more locked into the manufacturer's ecosystem even when their lenses are physically compatible with other systems. Recently some companies have been tackling this issue with adapters supporting AF (e.g. Metabones, Sigma, Fotodiox). This project intends to do likewise, to implement such an adapter at a prototype level.

Duties/Activities: Hardware wiring/soldering, coding for Arduino Nano and in a higher level language (any of C, C++, Java, or R).

Required Skills: Basic coding skills, but experience with firmware/hardware coding or low latency coding is an additional plus. As is knowledge of circuits and if the project goes further, possibly software reverse engineering techniques.

Learning Opportunities: This is a chance work on a classic sort of problem, to learn the details of how an everyday object works, and how we go about deciphering the inner workings of a closed proprietary system. What one learns in this project will depend on what one already knows coming in. Someone that comes in knowing just some basic coding may have a lot to learn about AF systems, firmware coding, circuit wiring, and analyzing digital logic. Someone that comes in with all of that could possibly delve further into the camera system and attempt to modify the open source portions of the camera firmware or even decompile the binary portions.

Expected Team Size: 2

Mentors

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