Darrell Bird

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EXPERIENCE

Principal Scientist & Software Engineer

Portrait Displays **January 2017 - February 2023, Seattle, WA**

- As a self taught C++ Software Engineer, I've worked on a number of display calibration hardware and software packages, most notably Calman and the Aurora Color Engine, as well as customized calibration packages for specific clients such as HP and Dell.
- As Principal Scientist I create mathematical algorithms for color science and display metrology.
- I designed, built, and managed our state of the art calibration and display metrology lab.
- Inventor of United States Patent No 2020/0143767 A1 - System and Method for Color Calibration. The focus of this was to create a mathematical method for the calibration of a unique subset of typical tristimulus colorimetric sensors which included one or more additional active sensors such as infrared or physical temperature. The data from the additional sensor along with the patented smoothing functions allowed us to make inexpensive sensors like the AMS TCS3430, AS7261, AS73211 incredibly accurate and highly capable of display calibration/characterization. Patent Link: https://patents.google.com/patent/US20200143767A1
- Created Portrait's first prototype HDR Pattern Generator on an embedded Linux system. (The company later developed this into a commercial product, the VideoForge PRO Pattern Generator supporting 4K DolbyVision, HDR-10, and HLG.
- Recent work was for macOS specific pattern generation, color management, and KVM using various Apple APIs including ColorSync, CoreGraphics, CoreFoundation, IOKit, and Metal rendering.

Laboratory Director

SpectraCal **January 2010 - January 2017, Seattle, WA**

- I designed, built, and managed our state of the art NIST traceable optical calibration and display metrology lab.
- Created a revenue generating and highly profitable business model for the recalibration and enhancement of color sensors already sold and in the field. This allowed us to partner with companies such as BestBuy and FutureShop to land contracts for the enhancement and yearly recalibration of all GeekSquad hardware.
- Created customized solutions for several independent R&D companies with unique optical testing needs. A notable example was to build up an optical characterization of newly developed transparent solar panels for window installation.

Gas Chromatography Chemist / Analyst

TestAmerica - (North Creek Analytical) **January 2001 - December 2006, Seattle, WA**

- Analysis and identification of petroleum hydrocarbons, VOCs, PCBs, Mercury, Pesticides and Herbicides in solvent extracted soil and water samples.

EDUCATION

Physics BS / Astronomy BS / Philosophy BA

University of Washington **January 2006 - August 2010, Seattle, WA**

- Emphasis on optics, large scale gravitation, and epistemology related to the philosophy of science.

SKILLS

- C++ [moderately proficient] (most emphasis on the C++17 standard and cross-platform conformance)
- CMake [highly proficient] (cross-platform build-system management).
- Linux/Darwin shell environments [highly proficient]
- Bash (sh, zsh, fish) / Powershell / CMD / Batch [proficient]
- Python / C# / Objective-C / Swift [somewhat proficient]
- JavaScript / Ruby / Go / Rust [limited proficiency] (most of my experience with these is limited to being able to read them and translate them into equivalently functional C++) .
- I've also got some open-source C++ and CMake utilities I frequently use published here: https://github.com/dribllerrad
- AI / Large Language Models / Machine Learning - I possess foundational skills in Python programming and have hands-on experience downloading and utilizing small local language models (huggingface) for basic text processing tasks in order to create simple text-based programs to interact with language models similar to ChatGTP. These programs have worked well for basic information retrieval and summarization. I've also worked with open source text to image and text to speech models.
- Effective Integration of AI Technologies: A new aspect of my programming work involves integrating AI coding tools into my software engineering workflow. Mastering the art of communicating with language models to extract desired outputs is paramount. Through experience, I've honed this skill, understanding that crafting effective prompts requires clarity, precision, and thoroughness. It's an iterative journey, marked by continuous error-checking and refinement.