# Elroy Pearson

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Electro-Optical Engineer with multi-disciplinary breadth driven to bring innovative products to market using microfabrication, optical design, computer interfacing, and hands-on prototyping. Proven track record of bringing value to companies by finding new customers and creating unique solutions that fit their needs. Adept at determining key elements of new design challenges and mastering the technologies and tools necessary to create appropriate solutions. Strong ability to work alone as well as excel as part of a team. MIT master's degree earned for researching MEMS spatial light modulators for holographic video displays.

- *Holography*
- *Optical Alignment*
- *Optical Design*
- *Sensor Prototyping*
- *Microfabrication*
- *Circuit Prototyping*
- *Programming*
- *Machining*

## Experience

### DepthSight Innovations

***Founder and Chief Innovator*** ***Jan 2015 - Present***

Developing new product concepts involving RF design, optics, microfabrication, and mobile app development.

### Knowles Corporation

***Optics R&D Engineer*** ***Jan – Dec 2015***

Contributed to R&D team and Advanced Manufacturing Engineering team efforts to drive to manufacturable design for innovative cell phone optical module.

- Designed and built thin film inspection station which enabled qualitative analysis of system critical membranes. Used SolidWorks and CNC Mill.
- Managed installation of optics lab thus creating space for developing optical measurement tools for characterizing the optical module.
- As the project manager for the motor portion of the module, coordinated part and tool designs and began communicating with factory to enable high volume manufacturing.

### Abbott Laboratories and AbbVie

***Instrument Scientist*** ***Oct 2010 – Dec 2014***

As part of Automation Engineering Group, created circuits and software for robotics, sensors for systems, microfluidic components, and proposed solutions to high-risk, high-reward challenges.

- Enhanced digital microfluidic device development using microfabrication techniques and tools such as thin film deposition, photolithography, plasma and wet etching, CMP, and CVD deposition.
- Developed halide evaporative deposition process onto plastic and then helped source roll-to-roll evaporative coating vendors.
- Collaborated on prototyping automated and robotic equipment by programming robotic devices in LabVIEW and scripting languages, building breadboard circuits, designing parts in SolidWorks, and assembling systems.
- Worked with internal scientists and engineers to develop microfluidic sensors for working with nanoliter volumes of samples. Made prototype system for determining protein concentration by probing less than 1 nanoliter of solution.
- Prototyped sensor for detecting the speed of sub millimeter particles travelling at >150 m/s. (continued on next page)

## Education

### MIT

***MS Media Arts & Sciences*** ***2001***

**Thesis:** MEMS Spatial Light Modulator for Holographic Displays

Pursued custom course of study including optics, holography, microfabrication, and business while working as a Research Assistant in the Media Lab's Spatial Imaging Group in order to create a holographic video architecture that could be scaled up affordably, in a compact form factor, and be the foundation of a high tech business.

### Utah State University

***BS Computer Engineering*** ***1999***
***Minors: Computer Science & Finnish***

For senior project, designed and built holographic step and repeat exposure tool and Zernike Polynomial Phase Plate Writer.

### Ricks College

***AS Electrical Engineering*** ***1996***

## Experience

### Abbott Laboratories and AbbVie (continued)

- Maintained all cleanroom equipment including air handling systems, plasma etcher, electron beam evaporator, sputter coater, UV aligner, barrel asher, white light interferometer, CMP, dicing saw, and CVD deposition equipment for fluorinated coatings and parylene.

### STX Aprilis

***Holographic Engineering Group Leader*** ***Jan 2010 - Aug 2010***

Collaborated with management to identify and start development of new opportunities based on Aprilis' core holographic technologies.

- Wrote Holographic Optical Element (HOE) modeling tools based on Kogelnik Coupled Wave Theory that enabled quick turnaround of in-depth design work and critical analysis of prototypes.
- Brought to the company new potential clients and business opportunities worth potentially millions of dollars.
- Advanced relationships with high profile clients through rapid prototyping – on multiple occasions making prototypes for shipment in less than 1 week.

### InPhase Technologies

***Optical Engineer*** ***Feb 2008 – Dec 2009***

Worked with Robustness and Reliability Team to identify problem areas and suggest improvements to holographic data storage drives.

- Effectively communicated with all groups within the company to solve challenging system problems on the holographic data storage drives.
- Quickly adapted to the needs of the company by accepting challenging tasks such as performing media storage lifetime tests, troubleshooting many drives simultaneously to discover and fix problems, and analyzing scattered light in the drive using TracePro.
- Redesigned and upgraded precision optical wedge test equipment – used optical analysis, drew designs in CAD software, machined parts with mill and lathe, and programmed computer/stage/camera interface to accomplish the goal in a matter of weeks.

## Experience

### Wasatch Photonics

***Electro-Optical Engineer*** ***Jul 2002 - Feb 2008***

Performed broad range of functions to characterize core technology, improve supplier base, increase sales, and enhance efficiency.

- Secured solid, long-term customer relationships by assisting clients with custom designs of holographic optics, communicating progress, ensuring that shipments met the promised specifications, and by helping to adjust designs as the customers' needs evolved.
- Designed many of the custom holographic diffraction gratings and HOEs.
- Helped develop core stock product lines by working with customers, vendors, and the development crew – gained company's first placement of products in Edmund Optics Catalog.
- Operated as Principal Investigator for last half of Phase II SBIR technology research program for NASA. Under the program, characterized existing 16" diameter HOEs, designed optical layouts in ZEMAX, fabricated new masters using pulsed 355 nm laser, developed wavefront detection software in C#, and reported directly to the COTR at NASA. Wrote SBIR proposals.
- Designed tradeshow booths and displays and supported customers as sales engineer. - Jointly invented patented design for HD Grating (patent # 20060274391).

### Diffraction, Ltd

***Electro-Optical Engineer*** ***Sep 2001 – Jul 2002***

- Designed new products by collaborating with clients.
- Fabricated diffraction gratings and other components using lithography and holography.
- Etched components using plasma etching and chemical bath etching.
- Performed measurements with AFM, electron microscope, optical microscopes, and profilometer.
- Helped write SBIR proposals.