

Overview

30+ years of experience in industrial imaging, and machine vision, optical systems, high speed imaging, as well as electronic design / *hands on* prototyping. I have a broad background in the processes and equipment needed to acquire quality images for automated inspection systems, principally through applied use of lighting and optical systems.

Experience

2017 – Present **Optical Metrology Solutions LLC** **Niskayuna, NY**
Partner in small consulting company. We offer a range of consulting services related optical system evaluation and Design, industrial imaging, and machine vision. <http://www.opticalmetrologysolutions.com/>

2002 – 2017 **General Electric Global Research** **Niskayuna, NY**
As an Optical Specialist at General Electric Global Research, my primary function is to help develop optical metrology systems for industrial inspection application, perform system integration, and oversee contract system integrators for the various GE business, including Aircraft Engines, Energy, and Medical Systems, Rail. To support these activities, I use a range tools principally Solidworks, LabVIEW, and Eagle PCB Design. Other tools for optical system design are used occasionally. I made extensive use of 3D printers, accelerating time from prototype to factory floor. I was the first person at GE Research to incorporate a collaborative robot as in an “Aid to Visual Inspection” station.

September 1999 - April 2001 **Dimension Data**
Farmington Hills, MI
Optical Technologist, supporting a variety of projects, including designing inspection equipment for industrial components, and improvement of existing technology for capturing 3D "point clouds" for reverse engineering of components and intraoral inspection. The company closed down in April 2001 as a result of the dot.com crash.

June 1998 - January 2001 **Intelligent Reasoning Systems Incorporated** **Austin, TX**
Sr. Vision Systems Engineer, responsible for development of illumination and optical systems for advanced inspection tasks on an existing and "next generation" platform. In September of 1999, I accepted a position at Dimension Data in Farmington Hills Michigan, but continued to work for IRSI part time on special projects until January of 2001.

1995-1998 **Industrial Technology Institute** **Ann Arbor, MI**
* 1998- Manager: Optics and Vision Application Laboratory
Responsible for overseeing and maintaining operations in our Optics and Vision Application Center (OVAC), an extensively equipped vision and optics lab featuring a wide range machine vision systems, multiple software packages, and several operating systems.
* 1992-1995 Information Systems (IS) Manager / Facility Manager: **Industrial Technology Institute**
* 1985-1992 Senior Opto-Electronics Specialist: **Industrial Technology Institute**
I was hired in to ITI primarily to do electronic / electro-mechanical fabrication.

1978-1985 **University of Dayton** **Dayton, OH**
Electro-optics Technician: **University of Dayton Research Institute**
Initially in the Applied Physics Laboratory, and later in the Materials Laboratory at Wright Patterson Air Force Base. When on campus, I was worked on a classified multi-million-dollar Air Force contract supporting high-energy laser development. At Wright Patterson AFB, I designed and built control systems, and computer interfaces for research test equipment, including the first PC controlled MTS material testing stand.

Education

1972 - 1974 Milwaukee Area Technical College Milwaukee, WI AAS Photoinstrumentation
1978 – 1985 University of Dayton Classes part time (physics, math, humanities)

Related Activities – Recurring Presentation Engagements

Invited speaker at Automate <http://www.automateshow.com/>
Invited Speaker at The Vision Show <http://www.visiononline.org/mvo-content.cfm?id=91>
Invited Speaker at NI Week <http://www.ni.com/niweek/>

Patents Granted

8,160,832 Apparatus and method for identifying a defect and/or operating characteristic of a system

7,693,673	Apparatus and method for identifying a defect and/or operating characteristic of a system
7,492,450	Methods and apparatus for inspecting an object
7,466,426	Phase shifting imaging module and method of imaging
7,435,986	System and method for detecting repeating defects in a light-management film
7,199,386	System and method for detecting defects in a light-management film
6,286,978	Light array system and method for illumination of objects imaged by imaging systems
6,161,941	Light array system and method for illumination of objects imaged by imaging systems
9,007,689	Method and apparatus for forming multiple images
8,919,004	Digital feeler gauge and method of using same
8,244,488	Thermal inspection systems
8,063,385	Method and apparatus for ultraviolet scan planning
7,466,426	Phase shifting imaging module and method of imaging
7,435,986	System and method for detecting repeating defects in a light-management film
7,199,386	System and method for detecting defects in a light-management film

Patents Applied For

20150165683	Operational performance assessment of additive manufacturing
20150096184	Method and apparatus for measuring thickness of an object
20150096183	Wireless taper gauge and method of using same
20120149281	Distance measurement systems and methods
20100140236	Laser machining system and method
20090245594	Iris imaging and iris-based identification
20080314878	Apparatus and method for controlling a machining system
20070115464	System and method for inspection of films
20070083577	System and method for detecting defects in a light-management film
20060022156	System and method for detecting defects in a light-management film

Recent Magazine Article

How to develop reliable vision applications (Article)
 By:Robert Tait, Optical Metrology Solutions Date:March 27, 2017
Control Design Magazine

Recent papers

Composite layup monitoring using structured light Author(s): Robert Tait; Kevin Harding; Chris Nafis Date Published: 14 May 2015 Proc. SPIE 9489, Dimensional Optical Metrology and Inspection for Practical Applications IV, 948908 (14 May 2015); doi: 10.1117/12.2177299

Method for controlling a laser additive process using intrinsic illumination. Author(s): Robert Tait; Guoshuang Cai; Magdi Azer; Xiaobin Chen; Yong Liu; Kevin Harding Date Published: 14 May 2015 Proc. SPIE 9489, Dimensional Optical Metrology and Inspection for Practical Applications IV, 948909 (14 May 2015); doi: 10.1117/12.2182511

Old Papers

SPIE Vol 850, 1988
 "Phase Detected Triangulation : a new twist on an old technology"
 Leonard Bieman, Kevin Harding, Mark Michniewicz, Robert Tait

AFWAL-TR-84-4098 Jan 1984
 An inexpensive micro-computer for laboratory data acquisition and test equipment control
 G.A. Hartman, R. W. Tait

Hobbies

Building electronic and mechanical gadgets, gutting and rebuilding homes, canoeing, caving.