Vladimir OVOD

www.asdvi.com **https://www.linkedin.com/in/vovod**

Over 15 Year Experience in Systems Engineering, Design, Integration and Testing of Electro-Optical/IR Systems, Sensors and Imagers for Measurements, Control, and Characterization from User Stories / Requirements - through Military-Proven ***Model-Based Design***, MKS/PTC tool and Agile SCRUM management, and Metric-Driven Verification - to Integration, Automated Tests, Production, and Applications

- Night vision systems (for FLIR; Air Force Research Laboratory; Raytheon; Teledyne, Inc.; SE-IR Corporation)
- Focal Plane Arrays (FPA) sensors/systems for target detection and tracking
- Image Processing (FPGA, Matlab, Simulink, C)
- Laser Detection and Ranging (LADAR)
- Laser systems for automated tests and measurements
- Systems engineering of complex IR/EO-systems
- Phase Doppler Anemometers (PDA)
- Imagers and control systems

Over 15 Years in Algorithm / Software Development and Systems Modeling / Simulations

- Electro-optical and IR systems/sensors
- Algorithms and software for DSP and image processing
- Automation of algorithms- and system tests
- Embedded software to control hardware
- Firmware and software design using Matlab, Simulink, Xilinx Sysgen, ISE, C, Visual Basic

PATENTS (*control algorithms:* claimed; designed and implemented using model-based development)

1. V. Ovod: "*Method and Apparatus for Protection from High Intensity Light*" (*patented worldwide*):
   - European patent EP # 2547093B1. Granted on April 4, 2016
   - German patent DE # 60 2012 017 561.3. Granted on June 16, 2016
   - Canadian patent CA # 2777974C. Granted on April 26, 2016
   - Japanese patent JP # 5745469B2. Granted on July 8, 2015
   - USA patent US # 8,878,920B2. Granted on November 4, 2014
2. V. Ovod. USA US # 20150116470A1. "*Method and Apparatus for Controlling Light Output Intensity and Protection from High Intensity Light*". Pending; submitted on April 30, 2015.

Note: The above patents relate to Radiometry-based *multi-target detection* (***LIDAR*** as Advanced Doctor Assistance System (ADAS) for patient safety); SW with control algorithms implemented in a broad spectrum of KSI products.

Publications

To look at over 30 technical papers, go to www.asdvi.com.

EDUCATION

- Ph.D. in electro-optical engineering. Ph.D. thesis "*Design, simulation, modeling, and metrological improvement of Laser Particle Size Analyzers*".

  Note: The research and development results relate to ***LIDARs*** *for detection, tracking, recognition, sizing, characterization, and velocimetry of micro-targets.*
- M.S. in electrical engineering. M.S. thesis "*Suppression of bulk waves in RF band-pass filters based on surface acoustic waves (SAW) propagation".*

Certificates / Trainings

- Embedded Systems Development
- DSP Implementation Techniques for Xilinx FPGA
- Agile SCRUM development process of software and Systems Engineering

EXPERIENCE

ASDVI, Goleta, CA *Sept 16 – Present*

SYSTEMS ENGINEER (Contract)

- Developed automated quality test of a customer production line of IR cameras using Matlab, Coder, and Compiler. Generated metric-driven reports of the IR cameras quality covering the last 4 years of production.

FLIR Systems, Inc., Goleta, CA *March 15 – July 16*

SYSTEMS ENGINEER (Contract)

- Developed Matlab code for data acquiring, analysis, characterization, and for automated radiometric tests of FPA IR sensors with programmable test equipment using National Instruments General Purpose Interface Bus (GPIB, IEEE-288), USB, RS232, and Ethernet.
- Developed Matlab code for automated tests of embedded software and performed validation of FPA IR sensors for applications in CAT mobile phones.
- Trouble-shot and improved C-code for image processing. Improved performances of IR sensors.

Karl Storz Imaging, Inc. (KSI), Goleta, CA *Sept 06 – March 15*

SENIOR SYSTEMS ENGINEER

- Used Agile SCRUM methodologies while leading engineering teams in SW, FW and HW design of high-definition image.
- Defined architecture of control units for imagers.
- Developed systems requirements documentation, Interface Control Documents (ICD), and Integration and Test Plans.
- Used MKS/PTC tool for systems requirement maintenance and soft- and hardware bug tracking. Used *Git* for software maintenance and source control.
- Executed Integration and Test Plans. Designed hardware, firmware (VHDL, Xilinx Sysgen, ISE, Matlab, Simulink) and software for data/image processing, and GUI for integration and automation tests of medical electro-optical systems with programmable test equipment. Reduced duration of systems / sensors tests from a week to a few hours and eliminated costs of test equipment.
- Developed algorithms and translated them from Matlab into C for automated tests. Using Matlab Compiler, designed executable applications including GUI for use by other engineers.
- Developed algorithms for radiometry-based multi-target detection (LADAR as Advanced Doctor Assistance System **(**ADAS) for patient safety) for adaptive control of endoscopic light sources (*patented worldwide*: USA, Japan, Europe, Germany, and Canada; see details on Page 1 under *Patents*).
- Translated image processing and control algorithms from Matlab into C and implemented C-algorithms in microcontroller which sufficiently reduced time of design, integration, and testing of embedded software.
- Tested algorithms using Software- and Hardware-in-Loop simulation. Developed embedded code for Built-in-Tests (Matlab code translated into C and VHDL).

Teledyne Imaging Systems, Inc., Camarillo, CA *Jun 10 – Jan 12*

CONSULTANT

- Developed FPGA-based code (VHDL, Xilinx Sysgen, ISE, Matlab, Simulink) for scene-based non-uniformity correction (SB NUC) in 4-megapixel FPA infrared imaging sensors for military applications.
- Designed Matlab model of SB NUC correction.
- Coordinated implementation, test, and verification of SB NUC.

Nova Sensors, Solvang, CA *Apr 02 – Sept 06*

SENIOR SCIENTIST

- Designed a Matlab model of automated low-noise tests of Focal Plane Arrays (FPA) for night vision sensors for Raytheon.
- Developed a broad spectrum of IR image processing algorithms for high frame rate acquisition, detection and tracking of military targets, and for rejection of cluttered backgrounds.
- Implemented the above algorithms in Field-Programmable Gate Arrays (FPGA) sensors at Air Force Research Laboratory (AFRL/MNGI) and SE-IR Corporation for commercial and military applications. SW and FW tools: Matlab, Simulink, Xilinx System Generator, and Xilinx Project Navigator (ISE).
- Presented advanced FPGA-based image processing package for FPA sensors at SPIE Symposiums.

Fujant, Inc., Carpinteria, CA *Mar 99 – Nov 01*

SENIOR SYSTEMS ENGINEER

- Developed DSP and embedded software for CDMA (code division multiple access) RF power amplifiers, including algorithms for adaptive power managements, self-characterization, and autonomous failure detection and failure recovery of cellular amplifiers (SW design tools: Matlab, C, Code Composer Studio™, Visual Basic).
- Developed algorithms and translated them from Matlab into C to control DSP and FPGA for automated tests of CDMA RF power amplifiers. Performed system-level analysis, optimization, test, and integration. Used digital and analog test equipment.

List of Selected Publications

Night Vision and Image Processing: Focal Pane Arrays (FPA), Infra-Red (IR) foveal/variable acuity sensors; FPGA-based Algorithms and Processing for Target Detection and Tracking

at Nova Sensors, Solvang, CA

1. V. I. Ovod, C. R. Baxter, M. A. Massie, N. I. Rummelt, P. L. McCarley, "FPGA-based processor for high frame-rate target detection on cluttered backgrounds using LVASI™ sensors", Proc. SPIE Vol. 6206, pp.633-644, SPIE Defense and Security Symposium, Orlando, FL., 2006.

2. V. I. Ovod, C. R. Baxter, M. A. Massie, P. L. McCarley, "Advanced image processing package for FPGA-based re-programmablle miniature electronics", Proc. SPIE Vol. 5783, pp. 304-315, SPIE Aerosense Infrared Technology and Applications XXXI, Orlando, FL., 2005.

3. J. T. Caulfield, V. I. Ovod, R. A. Coussa, C. R. Baxter, M. A. Massie, "Advanced on FPA and near FPA image processing for infrared sensors", Proc. SPIE Vol. 5783, pp. 272-281, SPIE Aerosense Infrared Technology and Applications XXXI, Orlando, FL., 2005.

4. J. Kristl, M. A. Massie, V. I. Ovod, J. P. Curzan, and C. R. Baxter. "Hypertemporal detection of boost phase missiles using VASI sensing and HTI algorithms", MD-SEA Conference, Monterey Naval Postgraduate School, Paper E5, November 20, 2003.

Electro-Optical Systems Design and Laser-based Scientific and Commercial Systems (selected publications).

Subfield: Remote sensing, LADARs for detection, tracking, recognition, sizing and velocimetry of micro-targets:

5. V. Ovod, "Modeling of multiple scattering from ensemble of spheres in a laser beam", J. Particle & Particle Systems Characterization, 16, pp. 106-112, 1999.

at Department of Chemistry of UCSB, CA

6. V. Ovod, "Modeling of multiple scattering suppression by a one-beam cross-correlation system", Applied Optics, 37, pp. 7856-7864, 1998.

at Theoretical Physical Chemistry Dept., Vrije Universiteit Brussel, Belgium

7. V. I. Ovod, D. W. Mackowski, and R. Finsy, "Modeling of the effect of multiple scattering in Photon Correlation Spectroscopy: Plane-wave approach", Langmuir, 14, pp. 2610-2618, 1998.

at Mechanical Process Engineering Dept., Technical University of Dresden, Germany:

8. V. Ovod, M. Stintz, and E. Heidenreich, "Modified conventional plane-wave scattering approach to estimate performance characteristics of laser particle-size analyzers", Journal of Modern Optics, 45, pp. 299-314, 1998.

at Process Engineering Dept., University of Bremen, Germany:

9. V. Ovod, T. Wriedt, "Single-multiple scattering technique to simulate a time-dependent signal of a pulse laser radar with separately located illuminating and receiving platforms", Journal of Modern Optics, 42, No 4, pp. 883-893, 1995.

10. V. Ovod, "Monodispersion of the investigated flow in the sorting unit of particle size optical and electrical analyzer", J. Particle & Particle Systems Characterization, 12, pp. 42-45, 1995.

A12 SANTA BARBARA NEWS-PRESS FROM THE FRONT MONDAY, APRIL 21, 2003

Local military spending is 'slowly trending d

DEFENSE

Continued from Page A1

Cuts in military spending — which started with the collapse of the Soviet Union — have pushed the number of defense-related jobs to fewer than 10,000 positions, which includes the 5,000 jobs at the base.

Although prime defense contracts — those over $25,000 — added $517 million to the economy last year, defense spending no longer drives the local economy as it once did.

"If you look at the total spending in relation to the county's gross product, the percentage is very small," said Bill Watkins, of the UCSB Economic Forecast Project.

Last year the gross product for Santa Barbara County was about $17 billion, Mr. Watkins said.

Still, the numbers from the Defense Department don't fully reflect the total spending locally on defense-related industries. The numbers also don't include third-party contracts or the full value of multiyear contracts, local business executives said.

"Defense spending is slowly trending down," said Mr. Watkins. "And the year-to-year changes — the downsizing and closures — aren't what's driving the economy anymore."

INFRARED AND ROCKETS

Bob Talley, a former vice president at Santa Barbara Research Center, remembers moving into a new development in San Roque in the early 1960s when most of his neighbors were fellow defense industry workers.

"I think the house cost about $25,000," Mr. Talley said, smiling over how much prices have changed. "I just chalked that up to Santa Barbara being a little more expensive than back East."

Like many in the industry, Mr. Tal-

MIKE

Dr. Vlad Ovod, a scientist at Nova Research in Solvang, adjusts a lens and infrared sensor that mimics the human eye and may be used in the missile defens

Santa Barbara News Press, April 21, 2003 page 3: "Dr. Vladimir Ovod, a scientist At Nova Research in Solvang, adjusts a lens and infrared sensor that mimics the human eye and may be used in the missile defense…. "

(12) **United States Patent**
Ovod

(10) **Patent No.: US 8,878,920 B2**
(45) **Date of Patent: Nov. 4, 2014**

(54) **METHOD AND APPARATUS FOR PROTECTION FROM HIGH INTENSITY LIGHT**

(75) Inventor: **Vladimir I. Ovod**, Goleta, CA (US)

(73) Assignee: **Karl Storz Imaging, Inc.**, Goleta, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 429 days.

(21) Appl. No.: **13/181,350**

(22) Filed: **Jul. 12, 2011**

(65) **Prior Publication Data**

US 2013/0016200 A1 Jan. 17, 2013

(51) **Int. Cl.**

H04N 7/18	(2006.01)
H04N 5/235	(2006.01)
A61B 1/06	(2006.01)
A61B 1/04	(2006.01)
G03B 15/03	(2006.01)
A61B 1/00	(2006.01)
G03B 15/14	(2006.01)

(52) **U.S. Cl.**

CPC ***H04N 5/2354*** (2013.01); ***H04N 7/18*** (2013.01); ***A61B 1/06*** (2013.01); *G03B 15/03* (2013.01); ***H04N 5/2352*** (2013.01); *A61B 1/00006* (2013.01); *A61B 1/00009* (2013.01); ***A61B 1/042*** (2013.01); ***A61B 1/0669*** (2013.01); *G03B 15/14* (2013.01)

USPC **348/68**; 356/317

(58) **Field of Classification Search**

CPC H04N 7/18; G01J 3/427; G01J 3/443; G02B 26/08

USPC 348/68, E07.085; 356/317, 320; 600/160, 473, 476, 118, 176; 702/64; 345/84

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,670,722	A	6/1972	Kosaka
4,356,534	A	10/1982	Hattori
4,366,529	A	12/1982	Takahashi et al.
4,415,952	A	11/1983	Hattori et al.
4,433,675	A	2/1984	Konoshima
4,509,508	A	4/1985	Tsukaya
4,527,552	A	7/1985	Hattori

(Continued)

FOREIGN PATENT DOCUMENTS

JP	62155689	A	7/1987

OTHER PUBLICATIONS

"A Robust Multistage Algorithm for Camera Self-Calibration Dealing With Varying Intrinsic Parameters" Adnane El-Attar, Mohammed Karim, Hamid Tairi, Silviu Ionita, E-ISSN: 1817-31.*

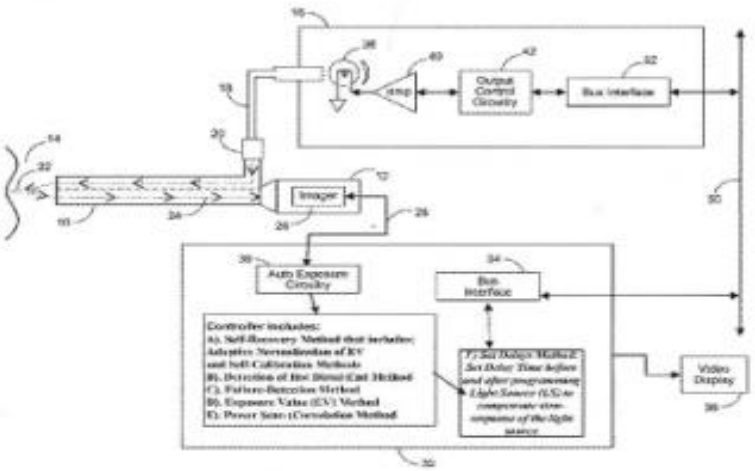
(Continued)

Primary Examiner — Dave Czekaj
Assistant Examiner — Dramos I Kalapodas
(74) *Attorney, Agent, or Firm* — St. Onge Steward Johnston & Reens LLC

(57) **ABSTRACT**

A method and apparatus where the output from a high intensity light source is controlled to produce well-exposed images/videos and to reduce automatically the intensity when an unsafe issue is detected in medical devices such as endoscopes and the like. The method and apparatus overcome problems to control light sources that have high-frequency noise, slow-response time, nonlinearity, and non-monotonic response time and to protect the patients' tissues from possible overheating/burning and the eyes of personnel and patients from possible direct exposure to high intensity light used in medical devices such as endoscopes and the like.

39 Claims, 8 Drawing Sheets



V. Ovod: Patents (Control algorithms claimed; designed and implemented using model-based development): Granted: European patent EP # 2547093B1; German patent DE # 60 2012 017 561.3; Canadian patent CA # 2777974C; Japanese patent JP # 5745469B2; USA patent US # 8,878,920B2.