



# VIRGINIA MOUNTAIN SECTION NEWSLETTER

IEEE Region 3, Council 09, Section 65

November 2005

Thursday, November 17, Clarion Hotel, Roanoke, VA

## Synthetic Vision Systems for Commercial and Transport Aircraft

Prof. Dr.-Ing. Uwe Klingauf  
Head, Institute of Flight Systems and Automatic Control  
Technische Universität Darmstadt, Germany

### Abstract

Continuously growing worldwide air traffic poses an immense challenge to civil aviation. While the number of flight operations is increasing, the overall number of accidents has to be reduced. In order to reach this ambitious goal, both avionics and the human machine interface (HMI) of the cockpit have to be improved in the onboard domain. A promising approach to increase situation awareness in the cockpit in an intuitive way of natural visual perception is the introduction of 2D and 3D Synthetic Vision Systems (SVS). One of the first applications in a commercial airliner is the Airport Navigation Function in the new Airbus A380. The presentation gives an overview of current status in SVS research and development including enabling technologies, in particular aviation databases. Applications for en-route and on-ground operations are presented.

### Speaker

Uwe Klingauf studied Mechanical Engineering at Technische Universität Darmstadt and obtained his doctoral degree in 1995. Subsequently he joined Dasa Military Aircraft in Munich, Germany, as a Systems Engineer and later group leader for Flight Control Systems. From 1999 until 2002 he was head of the development department Flight Guidance Systems at EADS/LFK (Missiles) in Munich. From 2002 until 2004 he was VP for Transatlantic Cooperations at EADS/LFK, being responsible for several air defense programs including MEADS (Medium Extended Air Defense System). Since 2004 he holds professorship as head of the Institute of Flight Systems and Automatic Control in the Department of Mechanical Engineering. Additionally, he acts as the Scientific Director of the recently founded European Center for Aviation Development – ECAD GmbH in Darmstadt and is a member of the American Institute of Aeronautics and Astronautics (AIAA).



Flight Display with Synthetic Vision

**Date:** Thursday, November 17, 2005

**Location:** Clarion Hotel, Roanoke

**Social:** 6:30 PM

**Dinner:** 7:00 PM

**Talk:** 8:00 PM

**Cost:** Member or Guest \$15.00

**Student:** \$ 8.00

**Reserve by 4 PM Monday Nov. 14**

**Dr. James Squire (540) 464-7548**

<mailto:squirejc@vmi.edu>

## Directions to

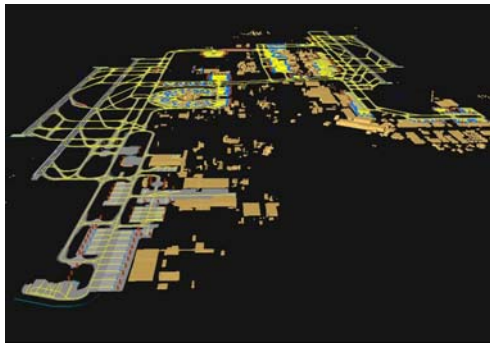
Clarion Hotel Roanoke Airport  
2727 Ferndale Drive NW  
I581 Exit 3 Hershberger Rd West  
1st Rt. onto Ordway Drive,  
¼ mile, Rt. Into Parking Lot.

## SEMINAR at Virginia Tech

Professor Klingauf will also be giving a related talk at Virginia Tech. on

Friday, November 18 at 11 AM in  
Room 117A Randolph Hall

*Subject: Aviation Databases for Flight  
Guidance*



Airport Mapping Database of Paris  
Charles-de-Gaulles airport

## Abstract

An increasing number of flight guidance functions is based on terrain, obstacle and other databases. Examples are Terrain Collision Avoidance and Warning Systems (TAWS), Synthetic Vision Systems, Terrain Referenced Navigation and Terrain Following Systems. Most of these functions are mission or safety critical and require precise, validated databases. The presentation describes approaches to ensure the quality of aviation databases and ways to integrate the required data for the different applications into a common in-flight database. Several sample applications are described and flight test results are presented.

## VIRGINIA MOUNTAIN SECTION COMPUTER CHAPTER MEETING

Wednesday, November 16  
6:00-8:00 PM  
Virginia Tech  
Room 300, Whittemore Hall

Please email Prof. Sandeep Shukla ([shukla@vt.edu](mailto:shukla@vt.edu)) if you will be attending. This is required for planning the meeting logistics.

**Panel Discussion: Are We Adequately Preparing Our Computer Engineers for the Fast changing Global Computer Engineering Economy?**

**Panelists: Profs. Lynn Abbott, Mark Jones Michael Hsiao, Cameron Patterson and Patrick Schaumont of Virginia Tech, and Chris Bonadeo of Prime Photonics. Organizer: Prof. Sandeep Shukla (Virginia Tech)**

This panel ponders the question whether we are preparing undergraduate computer engineering majors to be competitive in the fast changing computer engineering job market and globalization? A major reason for raising this question is that the recent trend of off-shoring routine programming and software building jobs have concerned many, and there has been a major drop in most schools in student enrollment in the area of computer engineering and computer science. Also, major companies such as IBM, Intel, Microsoft, GM etc., are building their design houses and labs in Asia and other places, which implies that there is an increasing globalization which affects the way engineers ought to be trained. Educators need to address this issue so that graduates remain competitive in the global market place. Are there syllabus changes needed to keep our students competitive in this changing scenario, and to reflect the nature of the jobs available in the US vs. that abroad? What else do we need to do to enable our students to differentiate themselves in the world wide competition?

## VMS OFFICERS

**Chairman: Cy Harbourt**  
<mailto:cdharbourt@ieee.org> 387-8941

**Vice Chairman: Jim Squire**  
<mailto:squirejc@vmi.edu> 464-7548

**Sec./Treasurer: Jan Helge Bohn**  
[mail to:bohn@ieee.org](mailto:bohn@ieee.org) 231-3276

## VMS EXECUTIVE COMMITTEE

**Chris Bonadeo**  
[cbonadeo@primephotonics.com](mailto:cbonadeo@primephotonics.com)

**David Geer** [dgeer@ieee.org](mailto:dgeer@ieee.org)

**Ira Jacobs** [ijacobs@vt.edu](mailto:ijacobs@vt.edu)

**F. Gail Gray** [fggray@vt.edu](mailto:fggray@vt.edu)

**Junior Past Chairman: Shawn Addington** [AddingtonJS@vmi.edu](mailto:AddingtonJS@vmi.edu)

## VMS Chapter Chairs

**Computer**  
**Sandeep Shukla**  
<mailto:shukla@vt.edu>

**Industrial Applications**  
**Glenn Skutt**  
[mail to:gskutt@vpt-inc.com](mailto:gskutt@vpt-inc.com)

**MTT and Electron Devices**  
[mailto:dain\\_miller@ieee.org](mailto:dain_miller@ieee.org)

## COMMITTEE CHAIRS

**VA Council Representative -open**  
**PACE – Howard Moses**

**Publicity- Jim Squires**

**Student Activities – D. Livingston**

**Awards –Shawn Addington**

**Membership Development I. Jacobs**

## NEWSLETTER

**Editor: Ira Jacobs**  
<mailto:ijacobs@vt.edu> 231-5620

Contact Newsletter Editor to be added to the VMS listserv

## WEBSITE

<http://www.ewh.ieee.org/r3/virginia-mountain>

**Webmaster: Chris Bonadeo**  
[cbonadeo@primephotonics.com](mailto:cbonadeo@primephotonics.com)