Proposals and Suggestions on a German Chapter of the IEEE AESS to be Founded

Wolfgang Koch, Fraunhofer, Germany

AESS BoG Meeting, Orlando FL, October 2013

Thesis 1: German universities, research institutions, and industrial companies are accepted global players in the area of aerospace and electronic systems.

Thesis 2: It seem natural to think of an technical exchange platform for this community in its own interest and linking it to other AESS-relevant communities.

Thesis 3: Although there exist related platforms in Germany, e.g. under the umbrella of the VDI/VDE or several industrial interest groups, there seems to be a gap.

Scope of a Possible German AESS Chapter

Platform for academia, research institutions (e.g. Fraunhofer, DLR), and industry with a clear focus on scientific and technical issues

- Presentation / discussion of research results in the areas of AESS and of industrial needs and requirements, link to NATO RTGs
- Informal and informative presentation of technical achievements to public sponsors and decision makers, inputs of their needs
- Strengthening personal acquaintance to facilitate formation of consortia for applying to calls for proposals (national, EU)
- Technically focused market for job opportunities (young engineers and scientists, possibility of company presentation)
- Fostering societal acceptance of AESS technology in the area of defence, security, UAS by invited talks, joint papers
- Offering tutorials, e.g. as a part of the German AESS workshops

Technical Events Triggering a Possible Chapter

Two annual technical workshops with a social event and rooms for side meetings before and after the technical sessions

- IEEE AESS Workshop "Sensor Data Fusion – Trends, Solutions, Applications" since 2006. This year independent of other institutions such as GI or Future Security
  - Singe track, longer slots for presentation and discussion
  - Tutorial (This year: invited talk by Roy Streit)
  - Get-together with piano recital (R. Klemm)

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Day #1 – Wednesday October 9th

Session #1: *Advances in Metodology*

13:30 – 14:00	**Wolfgang Koch** *Sensor Data Fusion: Trends, Solutions, Applications.*
14:00 – 14:30	**Stephan Reuter, Ba-Tuong Vo, Benjamin Wilking, Daniel Meissner, and Klaus Dietmayer** *Divergence Detectors for the δ–Generalized Labeled Multi-Bernoulli Filter*
14:30 – 15:00	**Taek Lyul Song, Darko Musicki, Hyoung Won Kim, and Felix Govaers** *Gaussian Mixture Tracking: MHT and ITS Comparison*

Session #2: *Indoor Tracking and Navigation*

15:30 – 16:00	**Tobias Deißler and Jörn Thielecke** *Fusing Odometry and Sparse UWB Radar Measurements for Indoor SLAM*
16:00 – 16:30	**Snezhana Jovanoska, Rudolf Zetik, Reiner Thomä, Felix Govaers, Klaus Wild, and Wolfgang Koch** *Device-free indoor localization using a distributed network of autonomous UWB sensor nodes*
16:30 – 17:00	**Jochen Seitz, Thorsten Vaupel, and Jörn Thielecke** *A Particle Filter for Wi–Fi Azimuth and Position Tracking with Pedestrian Dead Reckoning*

Day #2 – Thursday October 10th

09:00 – 10:00	**Keynote: Roy Streit** *Birth and Death Processes in Multi-Target Tracking, and Pointillist Speculations About Future Directions in Data Fusion*
	Session #3: *Aspects of Multi Sensor Fusion*
10:30 – 11:00	**Daniel Svensson, Felix Govaers, Martin Ulmke, and Wolfgang Koch** *Target Existence Probability in the Distributed Kalman Filter*
11:00 – 11:30	**Wolfgang Koch, Felix Govaers, and Alexander Charlish** *An Exact Solution to Track-to-Track Fusion using Accumulated State Densities*
11:30 – 12:00	**Samir Hachour, Francois Delmotte, David Mercier and Eric Lefevre** *Multi–sensor Multi–target Tracking with Robust kinematic data based Credal Classification*
	Session #4: *Emitter Localization and Tracking*
13:30 – 14:00	**Christoph Degen, Felix Govaers, and Wolfgang Koch** *MHT-Parameter Tracking in DoA and RToA*
14:00 – 14:30	**Christian Steffes and Lisa Meyer** *TDoA Based Acoustic Source Localization*
14:30 – 15:00	**Dieter Nagel and Sephen Smith** *Using a Hybrid Data Generator for Testing of ABF–Algorithms*
	Session #5: *Aspects of Higher JDL–Level Fusion*
15:30 – 16:00	**Jennifer Sander and Jürgen Beyerer** *Bayesian Fusion: Modeling and Application*
16:00 – 16:30	**Vincent Lenders** *Semantic Fusion of Live Web Content: System Design and Implementation Experiences*
17:00	**Social Event**

Day #3 – Friday October 11th

	Session #6: *Advances in Estimation Theory and Tracking*
09:00 – 09:30	**Rhian Davies, Lyudmila Mihaylova, Nicos Pavlidis, and Idris Eckley** *The Effect of Recovery Algorithms on Compressive Sensing Background Subtraction*
09:30 – 10:00	**Alexey Pak, Marco Huber, and Andrey Belkin** *On Weak Equivalence of Distributions in Application to Tracking*
10:00 – 10:30	**Martin Michaelis, Felix Govaers, and Wolfgang Koch** *State Dependent Mode Transition Probabilities*
	Session #7: *Automotive and Medical Applications*
11:00 – 11:30	**Horst Kloeden, Nesrine Damak, Ralph H. Rasshofer, and Erwin M. Biebl** *Sensor Resource Management with Cooperative Sensors for Preventive Vehicle Safety Applications*
11:30 – 12:00	**Daniel Wedekind, Hagen Malberg, and Sebastian Zaunseder** *Cascaded Output Selection for Processing of Capacitive Electrocardiograms by Means of Independent Component Analysis*
12:00	**End of SDF Workshop 2013**

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- IEEE Inertial Sensors and Systems - Symposium Gyro Technology organized by Gert Trommer, KIT, Karlsruhe

Installation of an internet visibility: labor intensive and expensive if made professionally. Provisional interim solution at the Fraunhofer FKIE server. Support by IEEE AESS?

Technical Areas / Representatives to Start With

Unmanned Aerial Systems

Dieter Moormann, RWTH Aachen; Thomas Gottmann, Airbus Defence and Space

Navigation Technology

Gert Trommer, KIT Karlsruhe; Werner Schröder, HS Offenburg

Space Surveillance Applications

Thomas Trelle, Airbus Defence and Space; Michael Wetjen, OHG Bremen

Advanced Radar Technology

Hans Hommel, Airbus Defence and Space; Ulrich Nickel, Fraunhofer FKIE

Aerial Vision Systems

Daniel Cremers, TUM München; Rene Koch, Diehl BGT

Multiple Sensor Data Fusion

Wolfgang Koch, Fraunhofer FKIE; Uwe Hanebeck, KIT Karlsruhe

Contact

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