

About the IEEE Aerospace & Electronic Systems Society Newsletter



Dear AESS Members,

Maybe most of you are a little overloaded right now, possibly a bit stressed, but still excited for the results!

Please consider having a short break to go through the many interesting articles of this third QEB edition of 2019. We have reported about prestigious awards, successful events and conferences, productive technical activities all around the AESS.

With great pleasure, thanks to the invaluable commitment of Prof. Hugh Griffiths, we have launched a new section that will be appearing in each QEB. It is entitled, "The History Column" and it is intended to commemorate events or inventions relevant to AESS, with an anniversary within the reference quarter. Discover whom this first instance is dedicated to!

Warmest regards,
Fabiola Colone
Editor-in-Chief, AESS QEB
fabiola.colone@uniroma1.it

Elevated AESS Members

2019 IEEE Senior Members

Senior Membership is the highest grade for which application may be made and shall require experience reflecting professional maturity; a candidate should be an engineer, scientist, educator, technical executive, or originator in IEEE-designated fields in professional practice for at least ten years and shall have shown significant performance over a period of at least five of those years. For more information, go to the IEEE Senior membership section of the [IEEE website](#).

Visit our [website](#) to view the complete list of our 2019 Senior Members.

The Story Behind a Success

In the hustle and bustle of daily life, we don't often stop to appreciate the path that led to this point in life. As the 2019 winner of the IEEE Fred Nathanson Memorial Radar Award, I'd like to take this opportunity to reflect on my own path and be thankful.

[Read Full Story](#)



The History Column

To me, the history of our subject is always fascinating and often surprising. To quote (approximately) the philosopher George Santayana: "Those who do not learn from history are doomed to repeat it." In the case of technology, we often find that ideas that we believe to be new and original actually surfaced many years ago. Our predecessors were pretty smart.

So the purpose of this column will be to describe, in each QEB, some event or invention within the scope of AESS, with an anniversary within that quarter. In all cases I will try to provide references, so that further reading and/or searching online will yield a lot more detail.

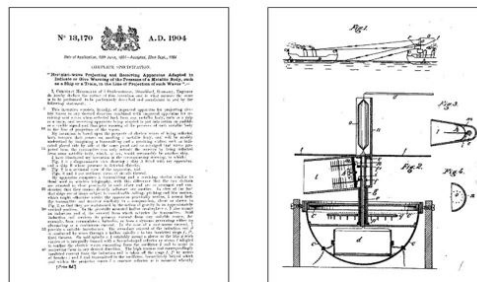
The first one in the series is **17 May 1904**, which was the date of the first demonstration of radar in Cologne, Germany, by Christian Hülsmeyer. This will be marked in October by the inauguration of an IEEE Historic Milestone plaque, close to the site of the first demonstration on the banks of the Rhine river. The demonstrations were reported in the *Kölnner Tageblatt* and *Kölnischer Zeitung* newspapers the next day. Translations of some sentences from these reports read as follows:

The apparatus worked extremely precisely. The inventor explained also that a non-metallic target reflects the electric waves, which could propagate through the wall of the hotel and act in the same and in the same way as before without obstacles. The spectators felt that they were witnesses of the first demonstration of one of the most important inventions of our time.

€. The electric waves emitted by the transmitter cannot reach the receiver directly, but must be reflected by a metallic object on the sea (that is, by ships), and thus reach the receiver. The attempt with the small apparatus, which was arranged only for small distances, succeeded perfectly.

An article giving a fuller description of Hülsmeyer's work and the Historic Milestone will be published in the AES Magazine in the next few months.

Hugh Griffiths
University College London



Two pages from Hülsmeyer's British patent in 1904.

An extended paper on this topic will be published in the *AESS Systems Magazine*. You can access it here: [Christian Hülsmeyer: Invention and First Demonstration of Radar, 1904](#).

Hugh Griffiths, Peter Knott, Wolfgang Koch

Membership Opportunities



2019 marks the third year of this innovative AESS program that helps connect students and young professionals with more experienced AESS members for two-way exchange. This program has been a great success.

Our vision is a flexible international program that is carefully implemented, attentively

supported, and singularly focused on providing benefits to AESS members.

We have an excellent core of distinguished international members distributed across industry, academia, and government, who are experts in their field and who are willing to share their time and experience to develop future leaders within the AESS.

More information is available on the [AESS website](#). Mentors and mentees, it is easy to sign up for the program. Join us today!

[Sign Up Today](#)

AESS Professional Networking and Mentorship Program in Action

As a part of IEEE AESS Professional Networking and Mentorship Program, Dr. Ganesh Subramanian has successfully completed his first mentorship assignment. His mentees belong to "Team Dronix". Er. Aravind and Er. Tamilsevan have successfully learned to design various drones, drone piloting, aerial mapping, and surveying.

They were able to develop customized Quad, Octo, and Hexa copters on their due course. Er. Aravind has earned a paid internship to do an aerial survey of slum areas of Odisha State, Government of India, from 5 June to 5 July 2019. Their mentee experience could be viewed on the YouTube Channel "Team Dronix" "IEEE AESS MENTOR" "MENTEE JOURNEY 2017 to 2019".

[Click Here to Watch](#)

AESS Members have free access to the [AESS Resource Center](#)! The Resource Center is a robust, web-based, technical learning and research center that is tailored to support the educational, career, and research needs of AESS members. It is a one-stop shop for AESS Video Tutorials, Publications, educational material, interviews, and more!

AESS Resource Center Submissions Invitation

The IEEE Aerospace and Electronic Systems Society (AESS) is pleased to invite submissions of tutorials and short courses for inclusion on the [AESS Resource Center](#). This provides an opportunity for authors to support the professional development members of the field and extend the reach of their training material to a global audience. Tutorials may be submitted under a non-exclusive agreement, which does not transfer ownership to IEEE. Further submissions process instructions may be found on the [AESS website](#).

AESS Membership Certificates are now available!

Follow these steps to download and print your certificate:

- Log into [Collabratec](#)
- Click on your name in the top right of the screen and select "Member Certificates" from the drop-down menu
- From the "Member Certificates" page, click on the "Download PDF" link to the right of "IEEE Aerospace and Electronic Membership"
- Open the PDF and print it

Chapter News

IEEE Central Texas Chapter

[Click Here to Read](#)

IEEE Ukraine Section (East)
AP/MTT/ED/AES/GRS/NPS Societies
Joint Chapter

[Click Here to Read](#)

AESS Technical Panels

Currently the AESS has nine Technical Panels:

- [Gyro and Accelerometer](#)
- [Radar Systems](#)
- [Space Systems](#)
- [Aerospace Control & Guidance Systems](#)
- [Cyber Security Panel](#)
- [Unmanned Aerial Vehicles](#)
- [Avionics Systems Panel \(ASP\)](#)
- [Navigation Systems Panel](#)
- [Glue Technologies for Space Systems Technical Panel](#)

The panels hold multiple meetings per year throughout the world, typically where conferences relevant to their technical interests are taking place. Creation of IEEE standards and support of IEEE Conferences are major thrust of technical panels. Each panel operates under its own charter and bylaws. Be sure to click the appropriate Technical Panel button above for more information on that panel.

Please contact [George Schmidt](#), VP Technical Operations, the Technical Panel Chairs or any member of the Board of Governors if you're interested in participating in the work of a technical panel.

Distinguished Lecturers are wanted to support the Panel's technical areas, as well as, in all the AESS areas of interest; for more information contact VP Education, [Lorenzo Lo Monte](#).

[Click Here to Read Panel Posts on Recent Activities](#)

Education News

AESS Short Course on Target Tracking

By Luke Rosenberg, June 2019

Over the week of 17-21 June, the South Australian (SA) and Queensland chapters of the Aerospace and Electronic Systems Society (AESS) hosted Dr David Crouse from the US Naval Research Laboratory to visit and present courses on target tracking. These included a two-day workshop in Adelaide on "Basic Algorithms for Target Tracking" and a three-hour tutorial in Brisbane on "A Crash Course in Basic Single Scan Target Tracking." In between, David also spent two days interacting with researchers at the Defence Science and Technology (DST) Group.

This short course is the third run by the SA chapter, with the first being an "Introduction to HF Over the Horizon Radar" by Joe Fabrizio in 2015, and the second on "Rapid Systems Prototyping and Electronic Warfare" by Lorenzo Lo-Monte in 2017. By keeping the cost down for participants, we were able to attract a large number of attendees. These totalled 114 with a large contingent of 78 from DST Group, 8 university students and 29 from industry.

The course was run at Adelaide University and included both lectures and demonstrations from his publicly available "Tracker Component Library" software suite. All material was extremely detailed, and it was clear that David has an incredible knowledge of the area. The topics included basic estimation, nonlinear dynamics, estimation with model mismatches, target measurement association and estimation with high nonlinearity. Some of the anonymous feedback included:

"The speaker had good insights to share"

"Very broad topics, good overview of tracking overall. Some topics feature more in depth which is good. I like how the topics were linked to code in the Tracker Component Library"

"Impressive coverage of the subject. The remarks on the practical aspects of the various algorithms were particularly useful as is the existence of a comprehensive set of free software."

There are many benefits in running an AESS short course, including the provision of training for staff and students, an increased profile for the IEEE and AESS and a substantial financial return. The SA AESS chapter now plans to invest the profits into networking events and awards aimed at students, Young Professionals and the Women in Engineering group.

AESS Distinguished Lecturer Program

All AESS Chapters and IEEE Sections are encouraged to take advantage of the AESS Distinguished Lecturer and Tutorial Program for their regular or special meetings, that allows them to select from an outstanding list of truly distinguished speakers who are experts in the technical fields of the society. For more information, please see the [AESS website](#).

AESS Awards

**2019 Robert T. Hill Best Dissertation
Award**

[Learn More Here](#)

**Call for Nominations - Due 31 October
2019**

**The following Awards were given at the IEEE Radar Conference
in Boston, MA on 24 April 2019:**

The 2019 Warren D. White Award for Excellence in Radar Engineering

J. Scott Goldstein

For contributions to the design, development, and fielding of multidomain radar, EW, and cyber systems.

The 2019 Fred Nathanson Memorial Radar Award

Julie Ann Jackson

For innovative systems engineering advancements in the exploitation of scattering phenomena for the next generation passive and active imaging radars.

The 2019 AESS Exceptional Service Award

Gökhan Inalhan

For exemplary work as a Technical Editor for the IEEE Transactions on Aerospace and Electronic Systems.

The 2014 M. Barry Carlton Award

Michael Leigsnering, Fauzia Ahmad, Moeness Amin, Abdelhak Zoubir

In recognition of the paper, Multipath Exploitation in Through-the-Wall Radar Imaging Using Sparse Reconstruction, published in the April 2014 issue of the IEEE Transactions on Aerospace and Electronic Systems.

(Not pictured: Michael Leigsnering)

The 2018 Robert T. Hill Best Dissertation Award

Patrick M. McCormick

In Recognition of his Ph.D. Dissertation, Design and Optimization of Physical Waveform-Diverse and Spatially-Diverse Radar Emissions.

The 2019 AESS Outstanding Organizational Leadership Award

Joseph Guerci

For leadership as General Chairman of the successful 2015 IEEE International Radar Conference.

The 2018 Harry Rowe Mimno Award

Michael Wicks and William Baldygo

*In recognition of the paper, *Expert System CFAR: Algorithm Development, Experimental Demonstration, and Transition to Airborne Radar Systems* from the September 2017 issue of the *Systems Magazine*.*

The 2018 Outstanding Technical Panel of the Year Award

The AESS Navigation Systems Panel

Michael Braasch, Chair

The AESS Fellows 2019:

Steven Butler

for technical leadership in aerospace systems

Hongbin Li

for contributions to adaptive radar signal processing with limited data

(not pictured)

Teng Long

for contributions to high resolution radar systems

Marco Lops

for contributions to radar target detection and estimation in clutter

Bruce Suter

for contributions to data acquisition for aerospace sensory information system

Other Awards Presented:

2019 Christian HÅ¼ismeyer Award

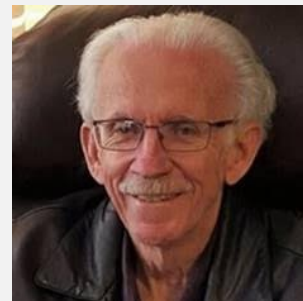
Dr. Alfonso Farina received the 2019 Christian HÅ¼ismeyer Award from the German Institute of Navigation (DGON)

In appreciation of his outstanding contribution to radar research and education.

Presentation of the 2018 Judith A. Resnik Space Award

The 2018 AESS Judith A. Resnik Space Award was presented to Dr. Walter Howard Delashmit, Jr. for his work on the Apollo Space Program Preflight and Postflight GNC analyses (with emphasis on Apollo 13) and early Skylab Program.

[Read More](#)



Conferences



RadAR Challenge "RadAR-A-Thon"

Hosted by 2020 IEEE International RADAR Conference,
Washington DC, USA
<http://ieee-aess.org/radar-challenge>



Report on the 2019 Radar and Remote Sensing Workshop (RRSW2019), Rome (Italy)

by Fabiola Colone and Francesca Filippini



[Read Here](#)

38th
DASC 

Digital Avionics Systems Conference
San Diego, California, USA | September 8-12, 2019

**2019 IEEE/AIAA 38th
Digital Avionics Systems
Conference (DASC)**

8-12 September 2019 in San Diego,
California, USA.

[Visit the Conference Website](#)

 **IEEE
AUTOTESTCON
2019**

**2019 IEEE
AUTOTESTCON**

26-29 August 2019 in National Harbor,
Maryland, USA.

[Visit the Conference Website](#)

2019 International Carnahan Conference on Security Technology (ICCST)

1-3 October 2019 in Chennai, India.

[Visit the Conference Website](#)

IEEE/ION PLANS 2020

20-23 April 2019 in Portland, Oregon.

[Submit your abstract](#) today for the IEEE/Institute of Navigation (ION) Positioning, Location and Navigation Symposium (PLANS) 2020. The conference will take place 20-23 April, 2020 at the Hilton Portland Downtown. The deadline for submitting abstracts is 30 October, 2019. [Read more](#)!

27th Saint Petersburg International Conference on Integrated Navigation Systems

25-27 May 2020 in Saint Petersburg, Russia.

Abstracts are due 1 November 2019 for this annual conference held in historic Saint Petersburg, Russia. Updated information will be [available](#).

Have a conference you'd like advertised in the AESS Quarterly Email Blast? Contact [Judy Scharmman](#) for details on how to have it included.

[View More Conferences](#)

Publications

Journal of Miniaturization for Air and Space Systems

J-MASS is a technical journal devoted to covering the rapidly evolving field of small air and space systems such as drones and small satellites. These platforms offer new, low-cost ways to accomplish a wide range of sensing functions for applications ranging from agriculture to land use and ocean surveys.

To submit a manuscript for the *Journal of Miniaturization for Air and Space Systems* (J-MASS), [click here](#).

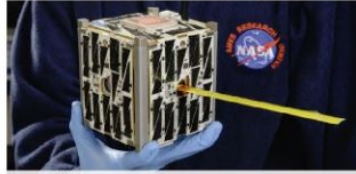
IEEE J-MASS

IEEE Journal on Miniaturization for Air and Space Systems

The IEEE Journal on Miniaturization for Air and Space Systems (J-MASS) is a new technical journal devoted to covering the rapidly evolving field of small air and space systems such as drones and small satellites. These platforms offer new, low-cost ways to accomplish a wide range of sensing functions for applications ranging from agriculture to land use and ocean surveys.



A drone performs a crop survey.
Photo credit: MIT Technology Review



A 1-U CubeSat Photo credit: NASA

Papers are sought that address innovative approaches to solving problems related to the development and use of miniaturized platforms such as drones and CubeSats. The scope includes both the sensors (across the electromagnetic spectrum) and platform systems. These topics include: airframe, propulsion, controls, navigation, power, communication, etc. Papers addressing theory, application, and operation of small platforms along with the design and development of platforms and sensor systems are welcome. Papers covering educational activities in developing small platforms or their sensors are also encouraged.

Manuscripts should be submitted to (<https://mc.manuscriptcentral.com/JMASS>) and should be original work within this scope. Manuscripts submitted to this journal must not have been published before and must not be under consideration for publication elsewhere. Further information is available as Instructions for Authors at the same URL for manuscript preparation, submission, and tracking. Paper submission opens September 1, 2018.

IEEE Copyright Form

Since the policy of the IEEE is to own the copyright to the technical contributions that it publishes, an electronic Copyright Form must be submitted at the time of manuscript submission.

Over-Length Fees

Up to eight (8) pages are published for no charge; articles that exceed the 8-page limit are charged an over-length page charge of \$200/page.

J-MASS Sponsors

The J-MASS sponsorship consortium includes:

- The IEEE Systems Council
- The IEEE Sensors Council
- The IEEE Geoscience and Remote Sensing Society
- The IEEE Instrumentation & Measurement Society
- The IEEE Aerospace and Electronic Systems Society

IEEE Aerospace and Electronic Systems Magazine

The *IEEE Aerospace and Electronic Systems Magazine* is a monthly magazine that publishes articles concerned with the various aspects of systems for space, air, ocean, or ground environments as well as news and information of interest to IEEE Aerospace and Electronic Systems Society members. Our goal is to inform the readers of technologies, state of the art, design trades, etc. so that they will gain insights into a field heretofore unknown to them. We want to introduce technical specialties to readers in the hope that something in the articles will give them some insight for their own fields of endeavor.

IEEE Transactions on Aerospace and Electronic Systems

Latest Issues

May 2019

April 2019

March 2019

February 2019

January 2019

December 2018

November 2018

Latest Issues

June 2019

IEEE Transactions on Aerospace and Electronic Systems (T-AES) focuses on the organization, design, development, integration, and operation of complex systems for space, air, ocean, or ground environment. These systems include, but are not limited to, navigation, avionics, spacecraft, aerospace power, radar, sonar, telemetry, defense, transportation, automated testing, and command and control.

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