RadarConf'25

2025 IEEE RADAR CONFERENCE

October 4-10, 2025 // ICE Krakow Congress Centre // Krakow, POLAND

AESS | IEEE POLAND SECTION

Communicating Radar Sense

IEEE AESS Radar Challenge 2025

For the Radar Challenge 2025 we have partnered with **Analog Devices** and **MathWorks** to provide participants with an **exciting opportunity to practice and showcase their skills** with state-of-the-art radar hardware, specifically the Phaser 10 GHz Phased Array Radar platform from Analog Devices. This is a low cost, simplified phased array radar which allows real beamforming hardware to be used for education, project proposals, and even software development.

More information available at https://www.analog.com/cn0566

The official IEEE AESS Radar Challenge page can be found below, which will contain up to date information regarding the challenge. Information on the Challenge will be also posted on the website of the IEEE Radar Conference 2025.

https://ieee-aess.org/radar-challenge

https://radarconf2025.org/

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SAVE THE DATE: October 4-10, 2025, Krakow, POLAND

For the 2025 Radar Challenge please follow the below steps:

1. Form your team to take part to the challenge. The team can consist of undergraduate, graduate, and PhD students or industry engineers; there is a recommended maximum of 5 people.
   a. Please note that at least one team member should be planning on physically attending the IEEE Radar 2025 conference in Krakow, Poland.

2. Register your team by sending an email to **radarchallenge25@radarconf2025.org**
   Proposals should include:
   a. Names and email address of team members along with a short biography of each member
   b. Team name and github site (or similar)
   c. 2-page description of your radar project that your team will work on. Include your project objectives and your proposed approach to create the solution. Keep it attainable, but the more creative the better! See here for some inspiration on past projects (https://ieee-aess.org/radar-challenge/radar-challenge-2024). Consider for example how you can use the different parameters of the FMCW signals, the phase array element of the device for angular positions measurements, different beamforming algorithms to an illuminator, MTI processing, or even SAR by combining the device with a moving platform. Possible example projects might be:
      i. Radar ISAR or SAR imaging
      ii. Drone tracking
      iii. MTI processing of moving targets
      iv. Clutter suppression techniques
      v. Experimenting with different transmit and receive antennas.
      vi. Exploring virtual arrays
      vii. Multiple Beam radars
      viii. Calibration techniques and comparisons
   d. All projects must be demonstrated on the *Phaser* hardware. But modifications to the Phaser kit are allowed, if necessary.
   e. All project proposals are tentatively due by **Nov 15th, 2024**.

3. Project Selection:
   a. There are a limited number of Phaser kits available. Therefore, the project proposals will be reviewed, and a limited number of teams will be selected to participate.
   b. All teams will be notified as to acceptance status, within about one month from the project submission deadline.
   c. The selected teams will be loaned a complete Phaser (https://www.analog.com/cn0566) kit. If the project is completed successfully, and presented at the 2025 IEEE Radar conference, then that team may keep the kit to continue their project or education.
   d. Phaser kits are expected to be shipped by around mid-December.

4. The following tasks must be performed by the dates indicated:
   a. Jan 2025: Setup and follow the online tutorial: wiki.analog.com/resources/eval/user-guides/circuits-from-the-lab/cn0566/quickstart
   b. Feb-March 2025: Create a test environment where you sense a 10 cm x 10cm metal or foil plate at 1m – 5m in 0.5m steps, showing the accuracy of your range estimations.
   c. March-September 2025: Keep in touch with your ADI/MathWorks mentor during this period while you are working on your own project idea with the equipment.
   d. Sept 2025: Share a PPT showing the latest outputs from your project
   e. Oct 2025: Attend the conference and present outcomes.

5. At least one team member needs to attend the 2025 Radar Conference in Krakow, Poland, where you will demonstrate that you have implemented the tasks and any additional capabilities your team was able to implement. Specifically, we ask you to bring the following deliverables to the Challenge event which will take place during the conference: at the live demo we will ask you to present either 5 slides showing your results with the Phaser, or a live demonstration of your creative concept you developed with the sensor.

6. By attending and providing your demonstration, your team will compete for the Radar Challenge Prize. The team will be ranked by a selected jury from members of the IEEE AESS Radar System Panel, looking at criteria such as technical quality and creativity of the proposed solution.

Terms and conditions.

A. Phaser hardware may not be sent, or used by, any ITAR prohibited or sanctioned countries.
B. Phaser kit may not be resold.
C. All teams agree to return the Phaser kits if the above deadlines are not met, or if the team is unable to present or demonstrate their project at the conference.
D. This is an open-source project. Therefore, the team's presentation and example code will be expected to be made available in some form.
E. Please note that by agreeing to participate photographs and video footage will be taken throughout the 2025 IEEE Radar Conference. These may be used for marketing and publicity in IEEE/Analog Devices/MathWorks blogs, websites, and in social media or third-party publications.

Possible Resources and Ideas for Projects:

I. MIT Cantenna labs: https://ocw.mit.edu/courses/res-ll-003-build-a-small-radar-system-capable-of-sensing-range-doppler-and-synthetic-aperture-radar-imaging-january-iap-2011/
II. Small and Short-Range Radar Systems: https://a.co/d/h8UzIRr
III. Introduction to Radar With Python and Matlab: https://a.co/d/j8LHwoB
IV. Previous edition of the Radar Challenge: https://ieee-aess.org/radar-challenge/radar-challenge-2024