

Thailand Embedded Systems Association



NGO, found in 2001
Strengthen embedded
systems industry
Network of partners



THAILAND
BOARD OF
INVESTMENT



NSTDA

Government

depa



Chulalongkorn University
จุฬาลงกรณ์มหาวิทยาลัย
Pillar of the Kingdom



Academic



TOYOTA TSUSHO
NEXTY ELECTRONICS
(THAILAND) CO., LTD.



Industry



SAIJO DENKI



TESA Top Gun Rally

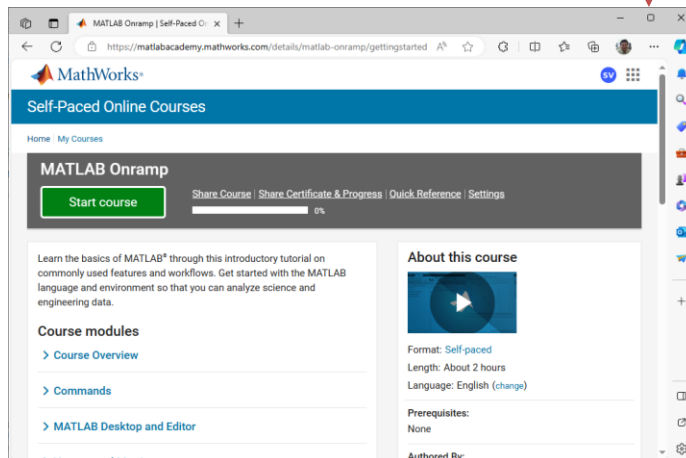


Announcement



info

MATLAB Onramp



prepare

Reward



finalize

Final sprint



System integration

AIoT/server/MATLAB workshops



practice

Evaluation



feedback

TGR2024 as an international event



MathWorks® Products Solutions Learn ▾ Company ▾ Help Center MATLAB sv Q

Student Programs

Overview Teach ▾ Learn ▾ Research ▾ Student Programs ▾

TESA Top Gun Rally 2024

TESA Top Gun Rally (TGR) 2024 will continue its tradition of collaborating with the host university to determine the competition theme based on the demands of the local community. As the host for TGR2024, Kasetsart University Sriracha Campus, located in Thailand's Eastern Economic Corridor (EEC), will host the competition. The EEC, a special economic zone focusing on high-potential industries, has identified predictive maintenance as a crucial need. TGR 2024's theme addresses this need by challenging participants to develop edge computing-based predictive maintenance systems. These systems will employ machine learning and model-based design to enable real-time, 24/7 anomaly detection.

Complimentary Software

MathWorks provides complimentary software for this competition. If your team is participating in this competition and needs software, fill out the software request form.

Student Tutorials and Videos

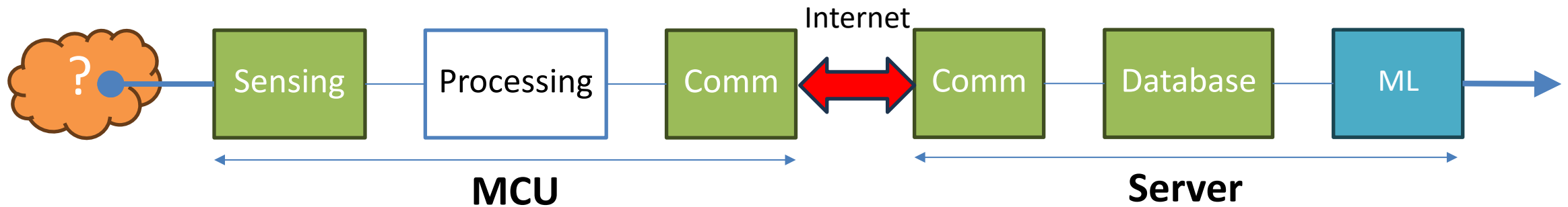
Learn how to use MATLAB and Simulink to design algorithms, create simulations, deploy code, and speed up software development for your projects.

<https://www.mathworks.com/academia/student-competitions/tesa-top-gun-rally.html>

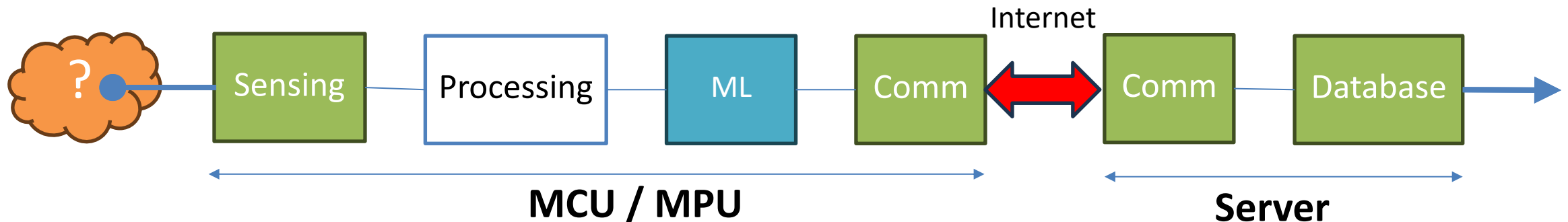
AIoT architecture



Cloud-computing approach



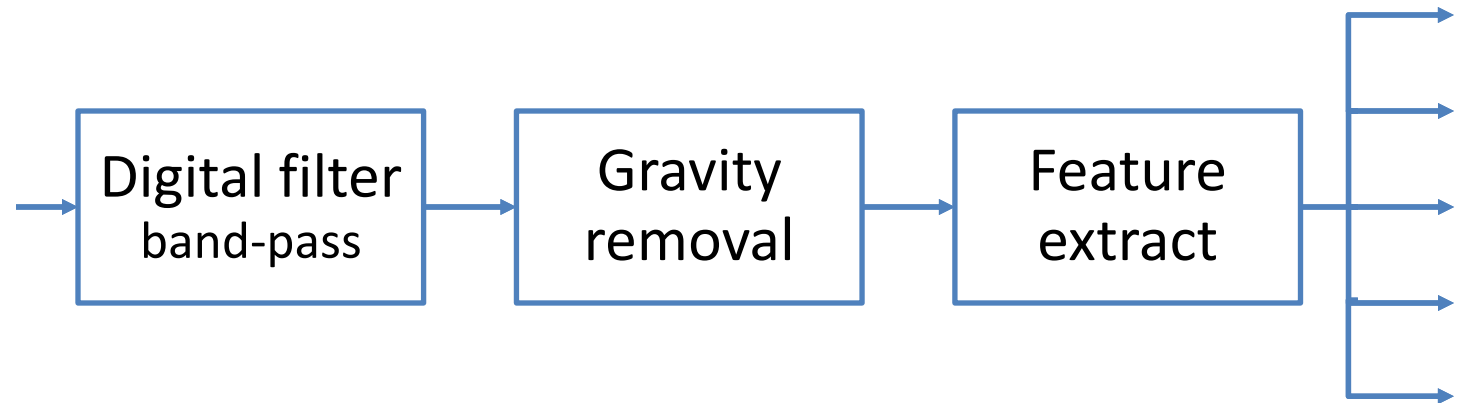
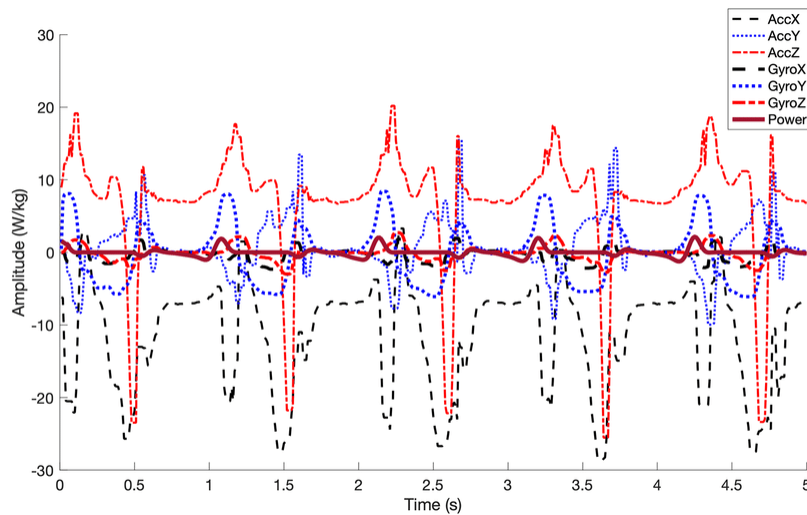
Edge-computing approach



How to code signal processing



IMU signals



- High-frequency noise
- Low-frequency drift
- Effect of gravity

- Windowing
- Adaptive
- Frequency-domain
- Joint time-frequency domain
- Fusion

MATLAB/Simulink for AIoT application



Q1: scope	<input type="checkbox"/> Application	<input type="checkbox"/> Function	
Q2: processor	<input type="checkbox"/> Arduino / Raspberry Pi	<input type="checkbox"/> Linux board	<input type="checkbox"/> MCU
Q3: HW support package	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Q4: Special HW	<input type="checkbox"/> No	<input type="checkbox"/> On-chip	<input type="checkbox"/> On-board
Q5: Special SW	<input type="checkbox"/> No	<input type="checkbox"/> Protocol	<input type="checkbox"/> ...
Q6: Timing	<input type="checkbox"/> ≤ 10 Hz	<input type="checkbox"/> ≤ 100 Hz	<input type="checkbox"/> > 100 Hz

Simulink

Simulink +
custom block

MATLAB coder +
dev toolchain

Embedded coder