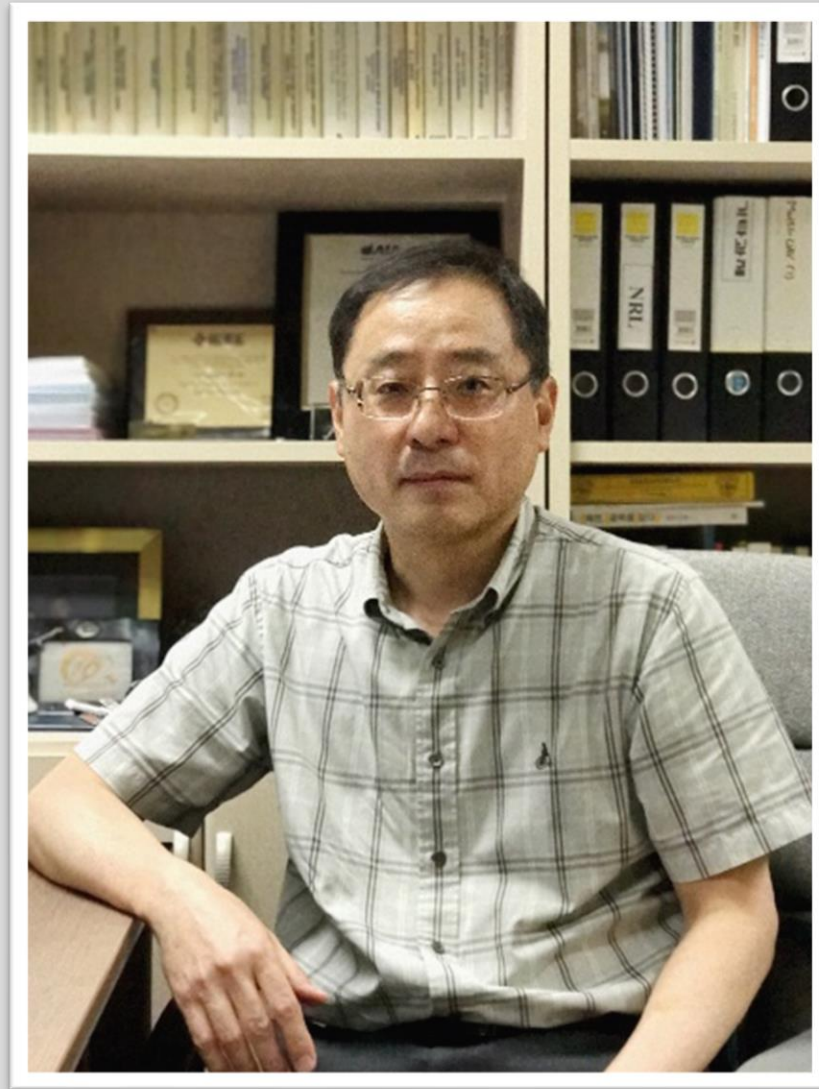## Faculty

Youdan Kim

Professor
Department of Aerospace Engineering
Seoul National University

▶ Research Interest
▷ Path Planning, Guidance and Control for Unmanned Aerial Vehicle(UAV)
▷ Missile Guidance and Control System.
▷ Fault Detection and Isolation Methods.
▷ Ballistic Missile Interception in High Altitude.
▷ Capture Region Analysis for FOV Constrained Missile
▷ Indoor Path Planning

▶ Biographical Information
▷ 1983/1985, B.S./M.S., Aeronautical Engineering, Seoul National University
▷ 1990, Ph.D., Aerospace Engineering, Texas A&M University
▷ 1990-1991, Research Associate, Texas A&M University
▷ 1992-2002, Assistant / Associate Professor, Seoul National University
▷ 2002-Present, Professor, Seoul National University
▷ 2011-2013, Director, Institute of Advanced Aerospace Technology

Laboratory Information

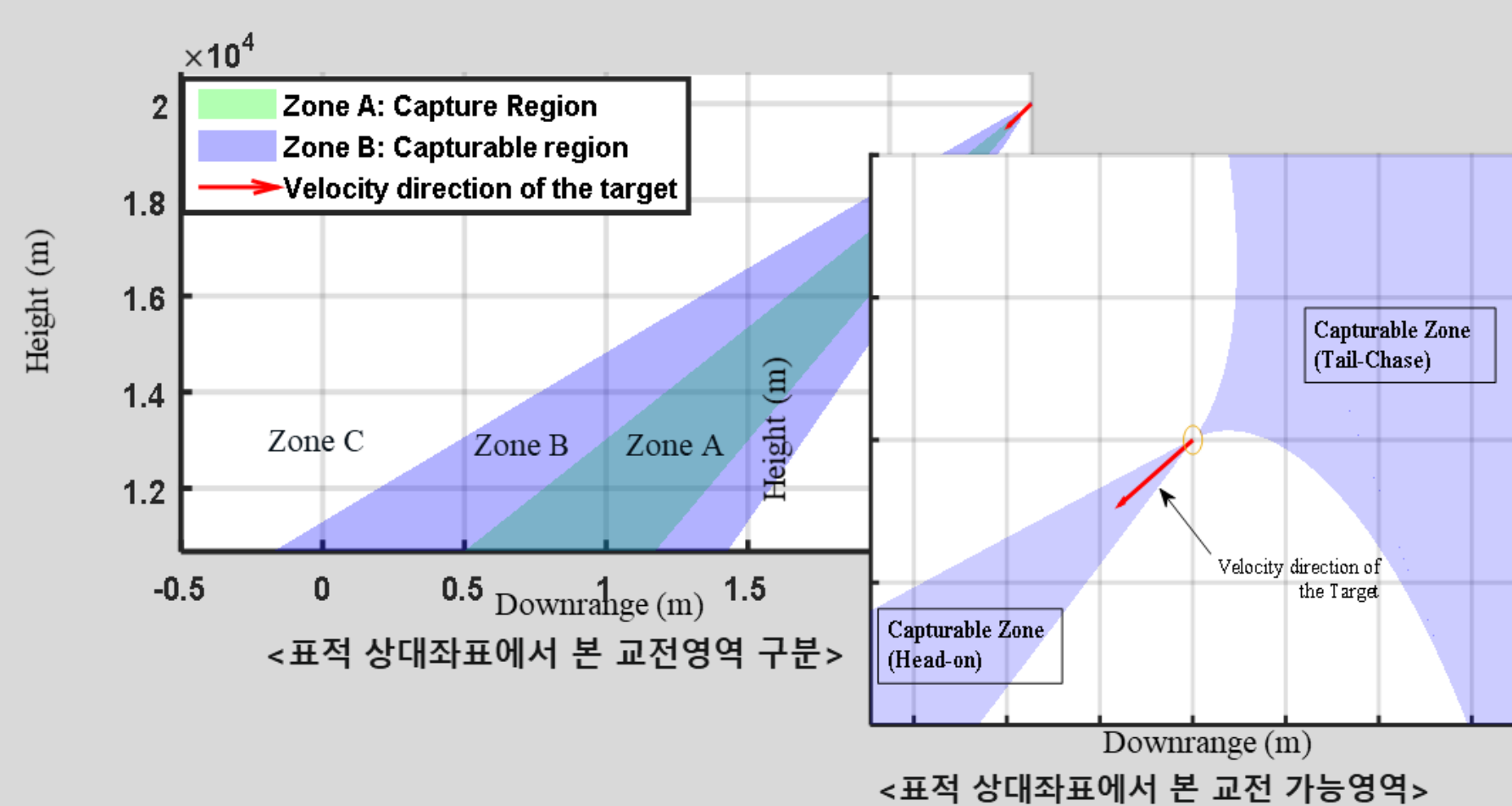▶ Researchers
▷ 13 Ph.D. Candidates
▷ 2 M.S. Candidates
▶ Alumni
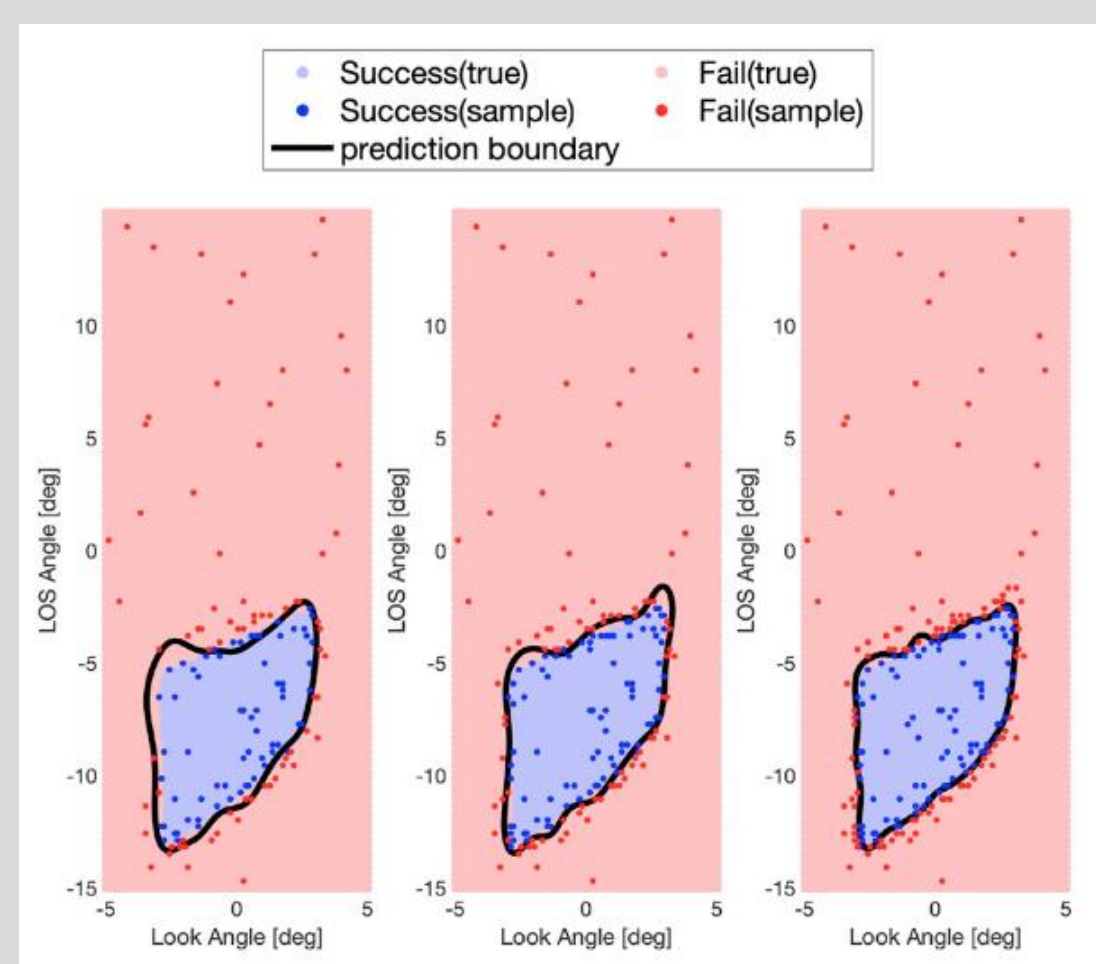▷ Ph.D. : 41 members
▷ M.S. : 88 members

▶ Contact Point
▷ Office: Rm. 318-2, Bldg. 302
▷ Website: http://fdcl.snu.ac.kr
▷ Telephone: 02) 880-7392

Research Topics III : Missile Guidance and Control

▶ Capture Region Analysis for FOV constraint Guidance

▶ Enhancement of the Launch Acceptability Region (LAR)

Research Facilities

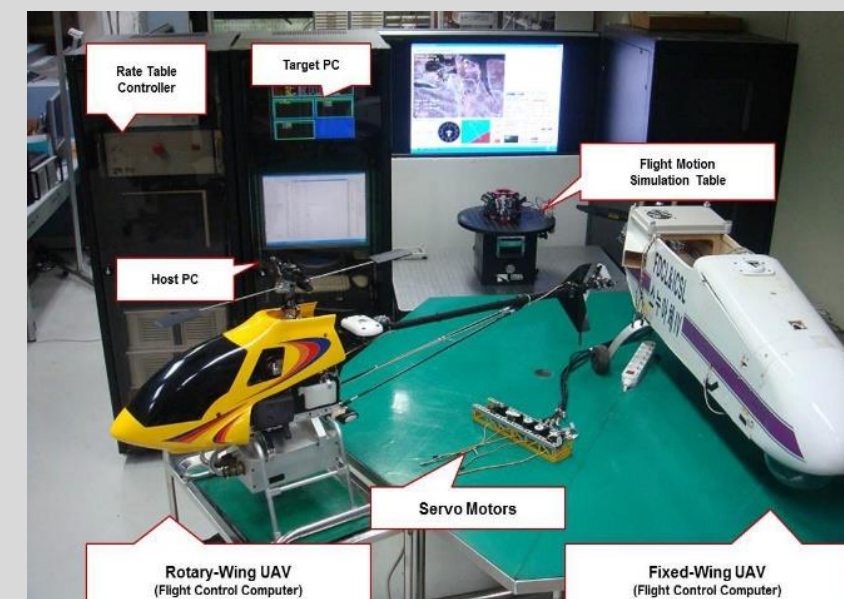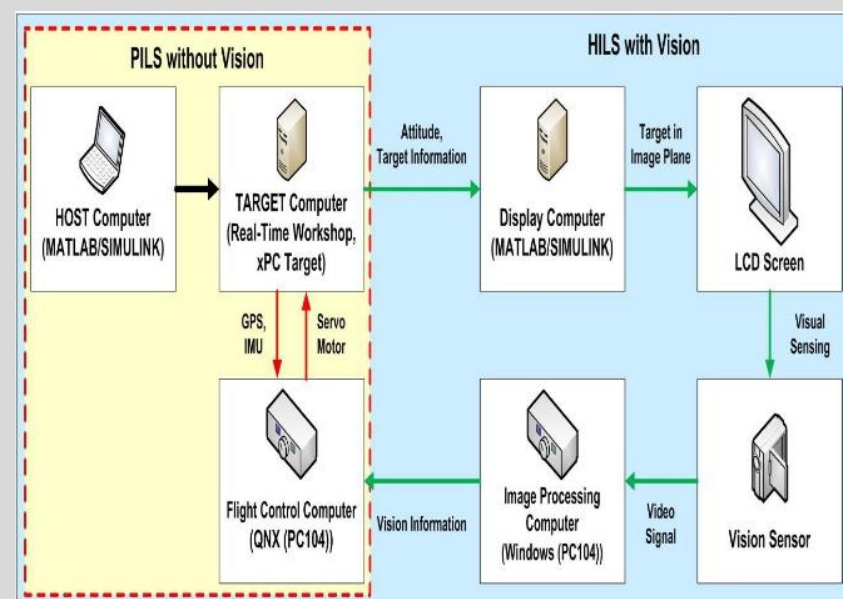▶ Fixed-wing UAV: SNUACE   ▶ Rotating-wing UAV: Quadrotor   ▶ Rotating-wing UAV: Helicopter
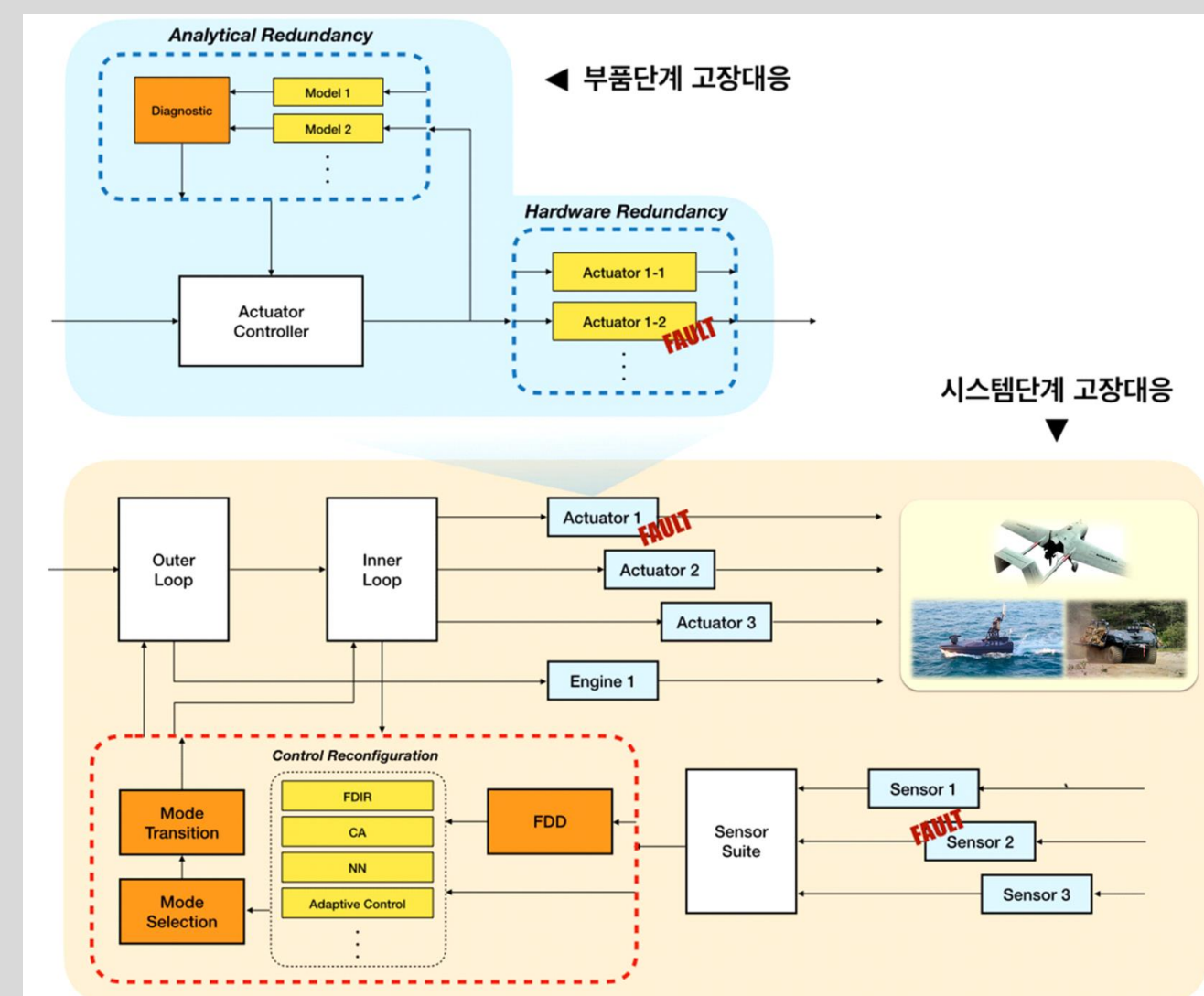

▶ GCS   ▶ HILS System   ▶ HILS Scheme

Ongoing Research Works

▶ Research Topics I: Fault Detection and Isolation Methods for Unmanned Aerial Vehicles
▷ A study on diagnosis/prediction of failures or malfunctions to prevent unexpected accidents caused by unmanned vehicles and to increase safety and reliability of the system

▶ Research Topics II: Mine Detection using Fixed-Wing Unmanned Aerial Vehicles
▷ Design of a model predictive controller for terrain-following flight and the precise altitude tracking flight

▶ Research Topics III: Missile Guidance and Control System with Semi-Active Laser Seeker
▷ Capture region analysis and enhancement for Field-of-View Constrained Missile

▶ Research Topics IV: Ballistic Missile Interception in High Altitude
▷ Design of an optimal control scheme and an appropriate performance index to enable a missile to intercept the ballistic target by a direct hit

▶ Research Topics V: Control of Guided Bomb in High-Angle of Attack Flight
▷ Modeling of various disturbances such as aeroelasticity and designing a data-driven controller.

▶ Research Topics VI: An Indoor Path Planning System for Fire Fighter's Search and Rescue Mission
▷ A study on the visiting order and route determination algorithm for rescuing people in a multiple-stage building in the minimum time

▶ Research Topics VII: Data-driven Guidance, Navigation and Control

Research Topics I & II : Fault Detection and Isolation & Mine Detection
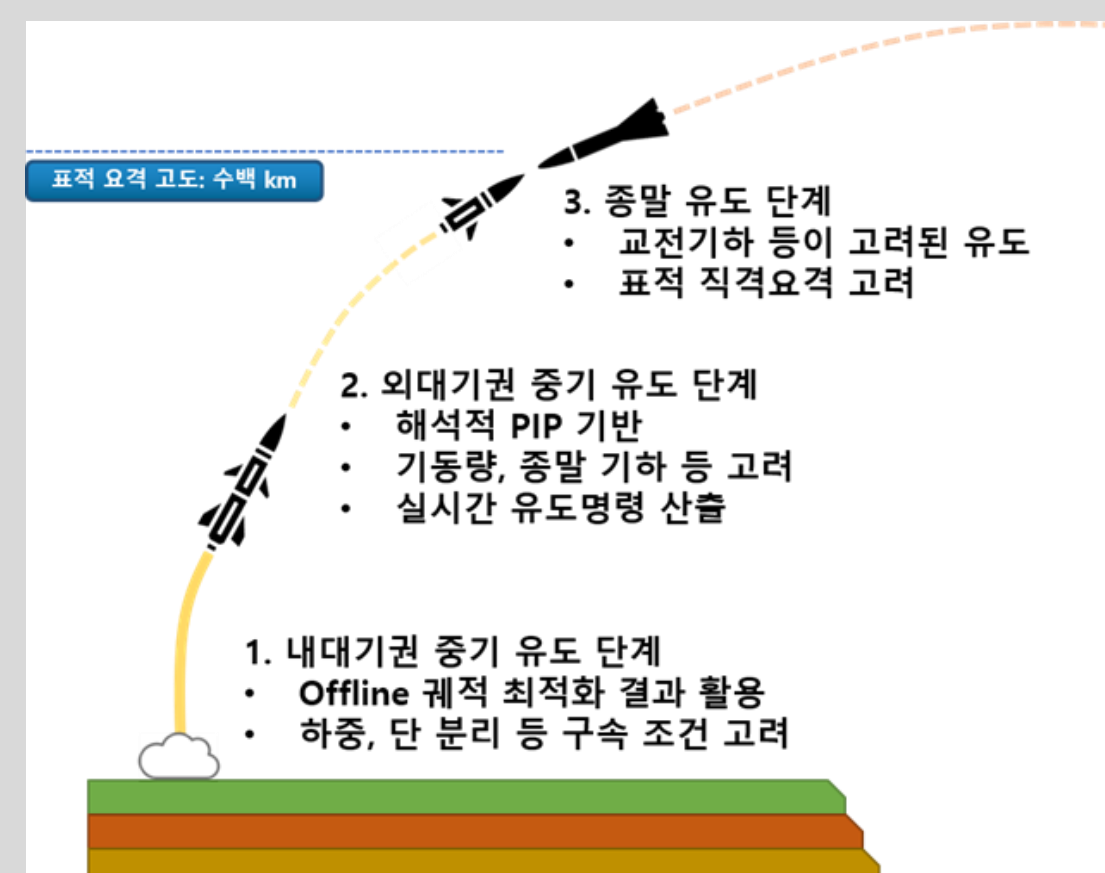
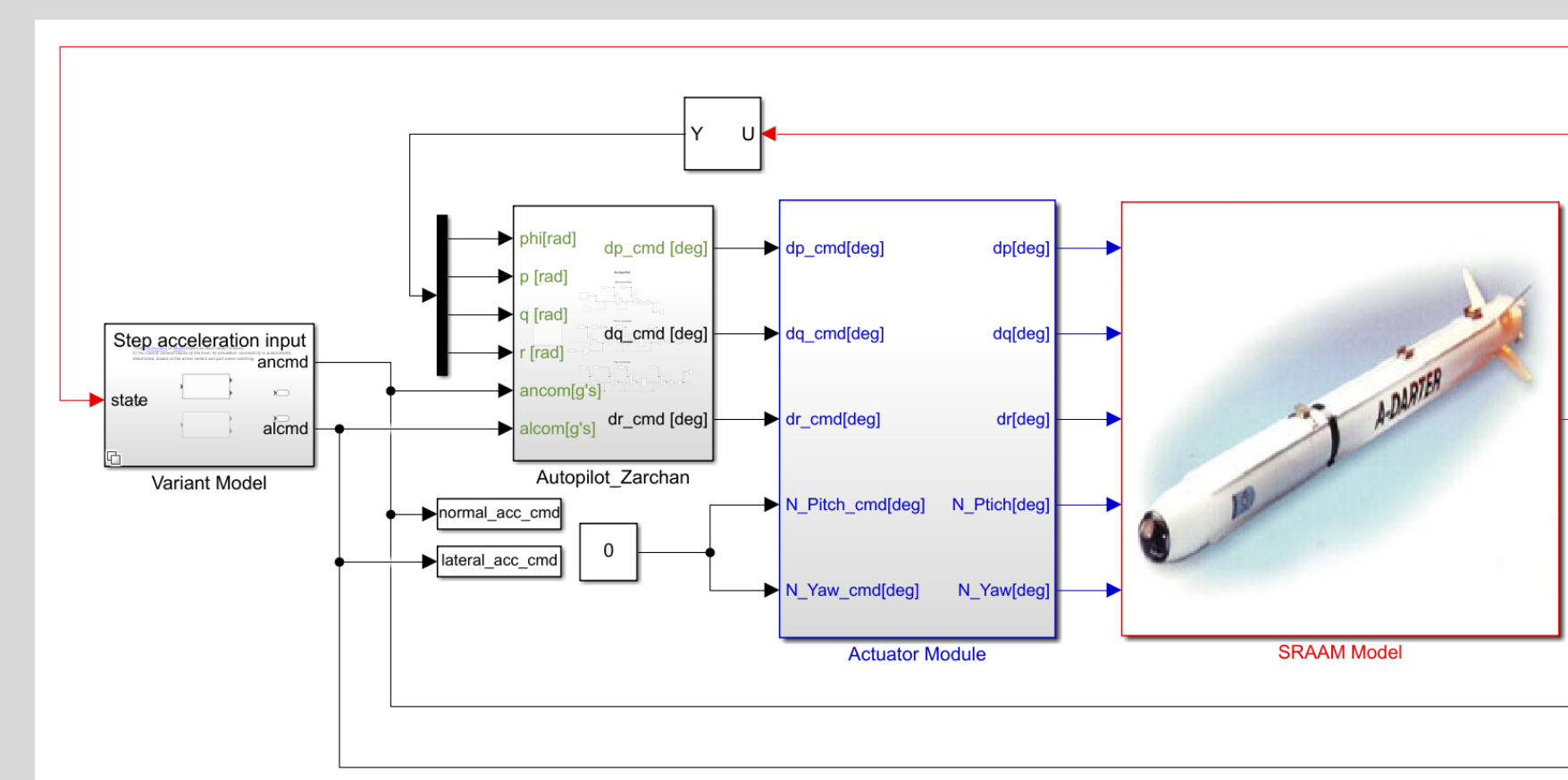▶ Reconfigurable System   ▶ Model Predictive Control for Terrain-Following Flight
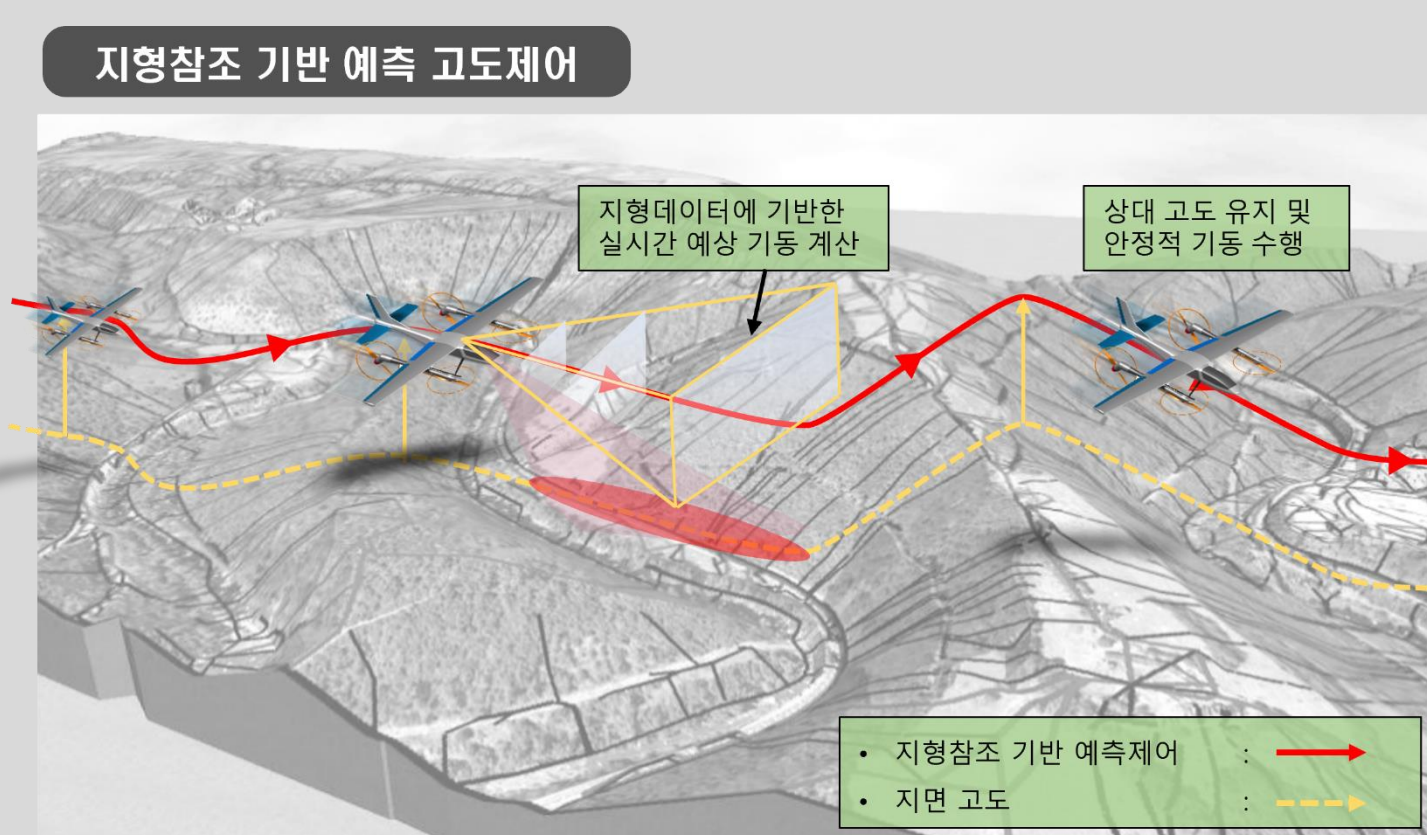
Research Topics IV & V : Missile Guidance and Control
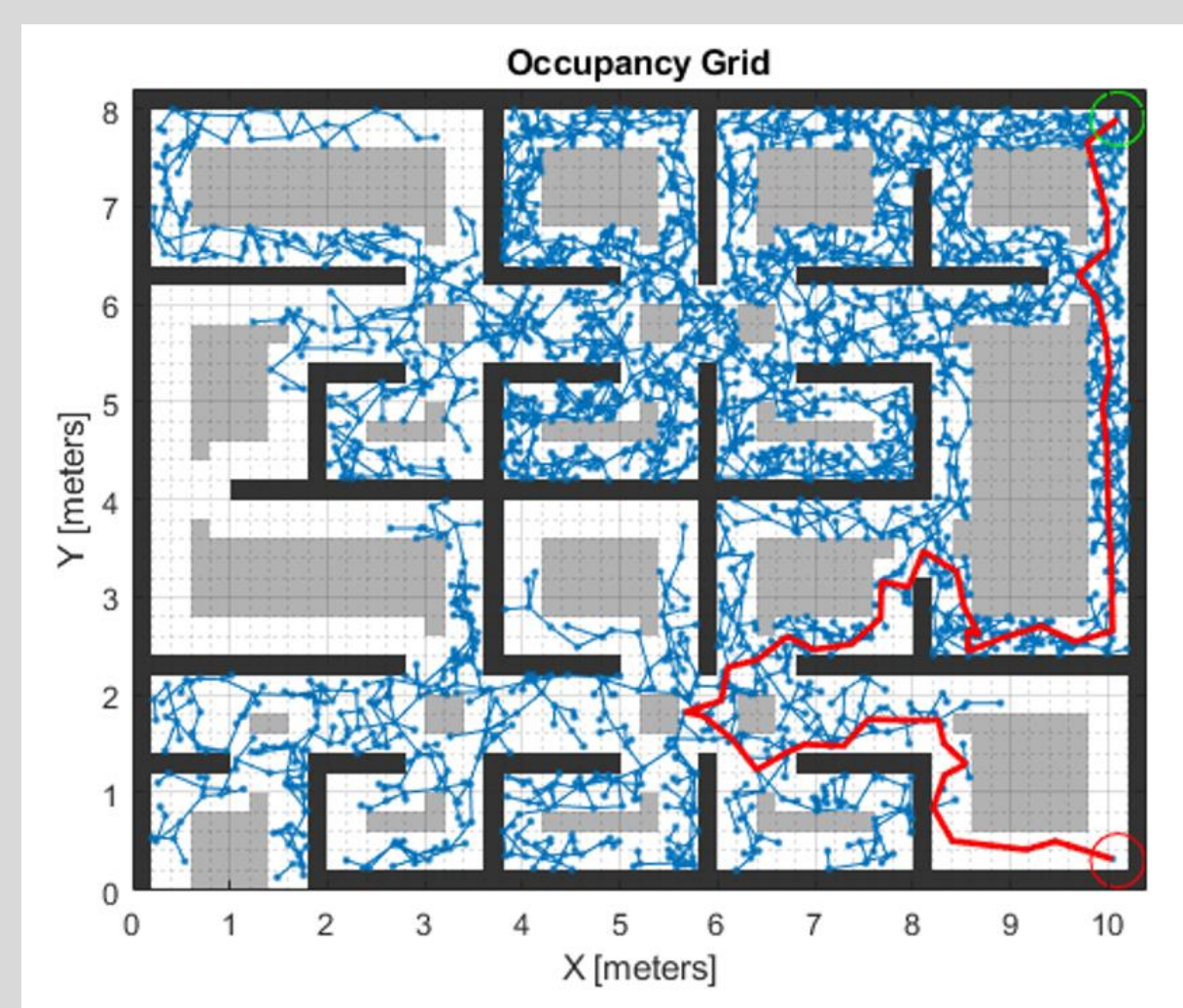
▶ Ballistic Missile Interception   ▶ Data-driven Missile Control

Research Topics VI & VII : Indoor Path Planning and Data-Driven GNC

▶ Indoor Path Planning   ▶ Reinforcement Learning