ARTHUR C CLARKE INSTITUTE FOR MODERN TECHNOLOGIES (ACCIMT)

M.D. Thilina Tharanga, Research Scientist, Robotics Division, ACCIMT.
State Institution for Research & Development.

Expertise

- Space technologies and applications
- Robotics
- Telecommunications
- Electronics
- Industrial services
- IT
Robotics Division

- Focus areas
  - Mobile robots
    - UAV
    - All terrain Rovers
  - Industrial Automation
    - FPGA
    - PLC
    - Embedded systems
UAVs

- Main classifications (Considering remote sensing)
  - High altitude systems
    - Extremely long endurance.
    - Expensive and need full flight maintenance crew.

NASA Helios

NASA Pathfinder
Cont... NASA’s Global Hawk
Low altitude systems

Classifications

- Fixed wing UAVs

- Rotorcrafts (Helicopters and Multicopters)
Fixed wing UAVs

Advantages
- Efficient
- For long range missions

Disadvantages
- Harder to maintain precise altitude
- Requires training
- Effected by severe weather
Multirotors

Advantages
- VTOL capability
- Operates in relatively smaller spaces
- Precise Altitude control

Disadvantages
- Smaller flight time
- Small scale surveys
UAVs for remote sensing

- Widely used due to mainly 4 reasons
  - Low cost
  - High resolutions data
  - Near real time data
  - Cloud free data
Applications

- Archeology
  - Identification of sites and looting
  - 3D mapping and Modeling
    - DroneDeploy open source app for DJI users
Agriculture

- Biomass & yield estimation
- Plant counting
- Chlorophyll indication

Plus...
- Stress assessment
- Senescence analysis
- Leaf area indexing
- Phenology
- Growth monitoring
- Crop discrimination
- Weed detection
- Tree classification
- Drainage planning
Surveying and monitoring

- Oil and Gas Exploration and Production
- Mineral exploration
- Geophysical surveys
- Civil engineering sites
- Oil and gas pipeline
- Pollution Control and Air Sampling
Disaster Management

- Disaster effects management
- Rescue and clear up effort supervision
- Disaster damage estimation
Drones at ACCIMT

- F450 Test platform
  - In-house fabricated and coded control system
  - Payload around 700g
Cont... Q-200 Agri Pro
- Twin Lumix NDVI System
- Swappable sensor pods
- Pix4Dmapper Discovery Post Processing Software
On-going research at ACCIMT

- Hybrid VTOL wing
  - Convenience of hover from multicopters
  - Efficiency of fixed wings

- Fully autonomous data acquisition
What to expect..

- Exponential growth in UAV for remote sensing
- Miniaturized sensors
THANK YOU