DSTL AIRBORNE MOTION IMAGERY RESEARCH DATASET

Category of Imagery Analyst Task	Associated Requirements	Target / Activity	Associated Imagery Files				Challenge Examples
			EO (WFoV)	EO (NFoV)	IR	LLTV	
Detailed Target Analysis	This task is an in-depth analytical survey of the target location, showing as much detail as the imagery permits. This includes (but is not limited to) the identification and highlighting of the following: ~ Ingress/Egress routes ~ Entry/Exit Points ~ Doors and Windows (Size, Construction and direction of opening) ~ Walls and Fences (Construction and measurements) ~ Target layout (admin, sleeping, working areas etc...) ~ Lighting (Flood, area, spot, security and associated sensors) ~ Roof access ~ Possible Firing/Defensive Positions ~ Construction or Demolition Activity ~ Trip hazards (raised areas, clothes lines, clutter etc...) ~ General Activity (Farming, normal routine etc...) ~ Signs of Occupation (Heat in buildings, chimneys, cooking activity) ~ Identification and High Counts of personnel (including women and children) ~ Animals (farm animals and dogs) ~ Irrigation ditches and Drainage ~ Water Sources (Wells, pumps etc...) ~ Power Sources (Electricity cables, generators and associated fuel supplies) ~ Vehicular presence and Activity (type and location)	Fire Station and neighbouring compound	02015003, 02017016, 02017017, 02017021, 02017026, 02018008, 02018013, 02018014, 02018019	03019004, 03019006, 03019011, 03019012, 03019013, 03020001, 03020005, 03020010, 03022006, 03022007, 03034004, 03034010	04008001, 04008002, 04014002, 04016015, 04016020, 04017006, 04018001, 04018007		1. Automated identification of those objects and activities described in the Associated Requirements (Column B) *(Using both Near real time (NRT) and archive imagery)* 2. 3D models of target made from different imagery sources. *(Archive imagery)* 3. Identification of man-made objects in natural areas (e.g. small outbuildings partially obscured by wooded areas, or power cables laid on ground). *(NRT and archive imagery)* 4. Automated Change detection between imagery collected at different times/dates (e.g. building now active or inactive due to changes in vehicles present or presence/absence of heat sources) *(Archive imagery)*
		Farm Complex	02018003	03021003			
		OP7 Hut and associated buildings/objects	02015008, 02015012, 02018011	03017004, 03017005, 03017008, 03017009, 03019009, 03019010, 03022004, 03022005	04007009, 04007010, 04009002, 04009003, 04014007, 04014010, 04014011, 04018005		
		Moll Harris Barn and associated buildings/objects	02015005, 02015006, 02018009	03017002, 03017003	04014002, 04014004, 04014005		
		Moll Harris Hut and associated objects	02015021, 02018009, 02018010, 02018026	03017018, 03022003, 03023001	04007010, 04007011, 04014021, 04018003, 04019014	03027002, 03027003, 03027006, 03027007, 03027008, 03027009, 03027010	
		Secure Compound	02015004, 02015005	03017001, 03017002, 03020006, 03020009	04014004		
Activity Analysis		Activity Analysis of the Main Car Park	02015003, 02017016, 02017017, 02017021, 02017026, 02018005, 02018008, 02018013, 02018014, 02018019	03019009, 03019011, 03019012, 03020004, 03020005, 03020010	04014002, 04016014, 04016015, 04016020, 04016021, 04018001		5. Change Detection of vehicles using the Main Car Park (including identification of recently arrived vehicles or empty spaces of departed vehicles utilising IR imagery) *(Archive imagery)* 6. Automated (or assisted) visual tagging of individuals of interest. Linked within Image Reference Library (IRL) to similar looking individuals. *(NRT and archive imagery)* 7. Automated (or assisted) visual tagging of vehicles of interest. Linked within IRL to similar looking vehicles. *(NRT and archive imagery)*
		Suspicious activity at OP7 Hut	02015012, 02018011	03017004, 03017005, 03017008, 03017009, 03019010, 03022005, 03022006			
		Suspicious activity IVO Moll Harris Hut	02018009, 02018010			03027002, 03027003, 03027006, 03027007, 03027008, 03027009	

Task	Identification	Scenario	02 series	03 series	04 series		Challenges (left)	Challenges (right)
Helicopter Landing Site (HLS) Study	Identification of landing hazards (such as crops, trees, bushes, flags, walls, fences etc..), and uneven ground (such as ruts and small ditches in a ploughed field).	IVO OP7 Hut	02015008, 02015012	03017008, 03017009, 03019009	04007009, 04007010, 04014010, 04018005		8. Automated identification of landing hazards (such as crops, trees, bushes, flags, fences etc..) and uneven ground (such as ruts and small ditches in a ploughed field). *(NRT and archive imagery)*	10. Use of EO and IR to judge 'softeness' of ground and its' ability to support the weight of an aircraft. *(NRT and archive imagery)*
	Identification also required of any nearby buildings/structures that may affect the approaches of aircraft to designated HLS	Open ground IVO T-junc close to Moll Harris	02015021, 02017024, 02018003, 02018004, 02018017, 02018021, 02018022, 02026002	03017015, 03017018, 03017019, 03020003, 03020006, 03020007, 03020008, 03021003, 03022014, 03022015	04014018, 04014021, 04014022, 04016023, 04025005		9. Automated identification of prospective HLS based on areas clear of the above. *(NRT and archive imagery)*	11. Use of imagery to assess level of slope (and its direction) on any prospective HLS. *(Archive imagery)*
Positive Identification of Targets	Identification of military vehicles and equipment (Tanks, IFV, APC, Self-propelled/towed artillery)

Identification of long barrelled weapons (such as rifles and Light/Medium/Heavy Machine Guns), anti-tank weapons (such as RPG 7/16/22), and man-portable air-defence systems (such as SA-7, SA-16 and Stinger). | Personnel carrying weapons (open and covered).   Static armoured vehicles or artillery | 02015008, 02015012, 02018011, 02018013, 02018014, 02018026, 02018028 | 03017020, 03017021, 03019010, 03019012, 03019013, 03022003, 03022004, 03022005, 03022006, 03022007, 03022008, 03023001, 03023002 | 04014011, 04018005, 04018007 | | 12. Automated Weapon detection or alerting (identification of long/straight man-made object being carried or driven/operated) *(NRT and archive imagery)*

13. IR to EO cross-cueing. Picture in Picture (PiP) or visual overlay to show extreme hot/cold IR returns (such as weapon fire, explosions, disturbed earth or thermal anomaly - aka an IED) onto related EO imagery. *(NRT and archive imagery)* | 6. Automated (or assisted) visual tagging of individuals of interest. Linked within IRL to similar looking individuals. *(NRT and archive imagery)* |
| | Identification of Improvised Explosive Device (IED) related manufacture (such as Home-Made Explosive (HME) drying or mixing on large mats) or placement (main charge, pressure plate, command wire etc...) | Placement of IED on T-junction (Buried main charge with surface laid command-wire) | 02018017, 02018021, 02018022 | 03020003, 03020007, 03020008, 03022010, 03022013, 03022014, 03022015, 03022016 | 04018011 | | 14. Automated identification of objects of contrasting colours to surroundings (e.g. person / body in vegetation, or a blue command wire surface laid on grass etc...) *(NRT and archive imagery)* | |
| Mapping (Mosaics) & Vehicle tracking | | Follow of red pickup | 02015013, 02018005, 02018008, 02018009, 02018010, 02018011, 02018013 | 03017009, 03017010 | 04014012 | | 7. Automated (or assisted) visual tagging of vehicles of interest. Linked within IRL to similar looking vehicles. *(NRT and archive imagery)* | 15. Mosaic and 3D model of imagery collected in an unplanned manner (different slant angles and altitude / zoom levels), using both EO, IR or mix. |

Notes:

1. The released dataset consists of 112 motion imagery files collected on behalf of Dstl in 2010, with a total size of 376Gb.

2. As per the release conditions laid out when access was granted, these files (whole or in part) are not to be shared without the explicit permission of the UDRC Project Manager or Dstl.

3. The following table contains a breakdown of these files by sensor type against example tasks that are conducted by Imagery Analysts. Sensor types include Electro-Optical (both Narrow and Wide Field of Views), Infra-Red and Low-Light TV. The final column contains examples of possible challenges identified by Imagery Analysts, and does not indicate work that is either planned or underway by Dstl.