twoSIX TECHNOLOGIES

Two Six Technologies

IARPA Video LINCS Proposers Day
February 7, 2024

TWOSIXTECH.COM

TST Personnel and Facilities

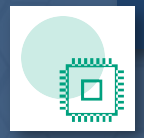
- ~600 employees, 80% cleared TS or above.
- Headquartered in Arlington, VA with offices in 8 cities across the U.S.
- TOP SECRET facility clearance with approval for TOP SECRET storage and multiple classified systems.

Technical Areas of Expertise

Deep expertise in five focus areas enables Two Six to deliver impact focused innovation at speed

CYBER

Comprehensive cyber capabilities, including network security, CNO, AI vulnerability research, cryptography, and all-domain digital battlespace



ELECTRONIC SYSTEMS

Specialized expertise in embedded device security, hardware and firmware vulnerability assessments, reverse engineering, microelectronics, and FPGAs and custom PCB design

SECURE SOLUTIONS

Scalable object-level encryption and enterprise-grade protections for the most sensitive data, in the cloud, on-premise or in hybrid environments

INFORMATION OPERATIONS

Our platforms enable listening, discovery, and engagement, and help to identify and counter misinformation and propaganda in the information environment

ANALYTICS

Data analytics and visualizations provide powerful insight into the most complex data sets

Talented teams with unique expertise and dedicated specialists
Highly respected centers of excellence within each focus area

Suite of Products

STRATEGIC ADVANTAGE: PLATFORMS FOR SOFTWARE DELIVERY

IKE

Cyberwarfare platform utilizing machine learning and AI to improve human understanding of the digital battlefield.

PULSE

Platform for full spectrum operations in the information environment, including persistent passive data collection, multi-platform audience engagement, and custom data views and dashboards.

M3

Media Manipulation Monitor (M3) detects and analyzes media manipulation by foreign governments, including censorship, disinformation, and propaganda campaigns.

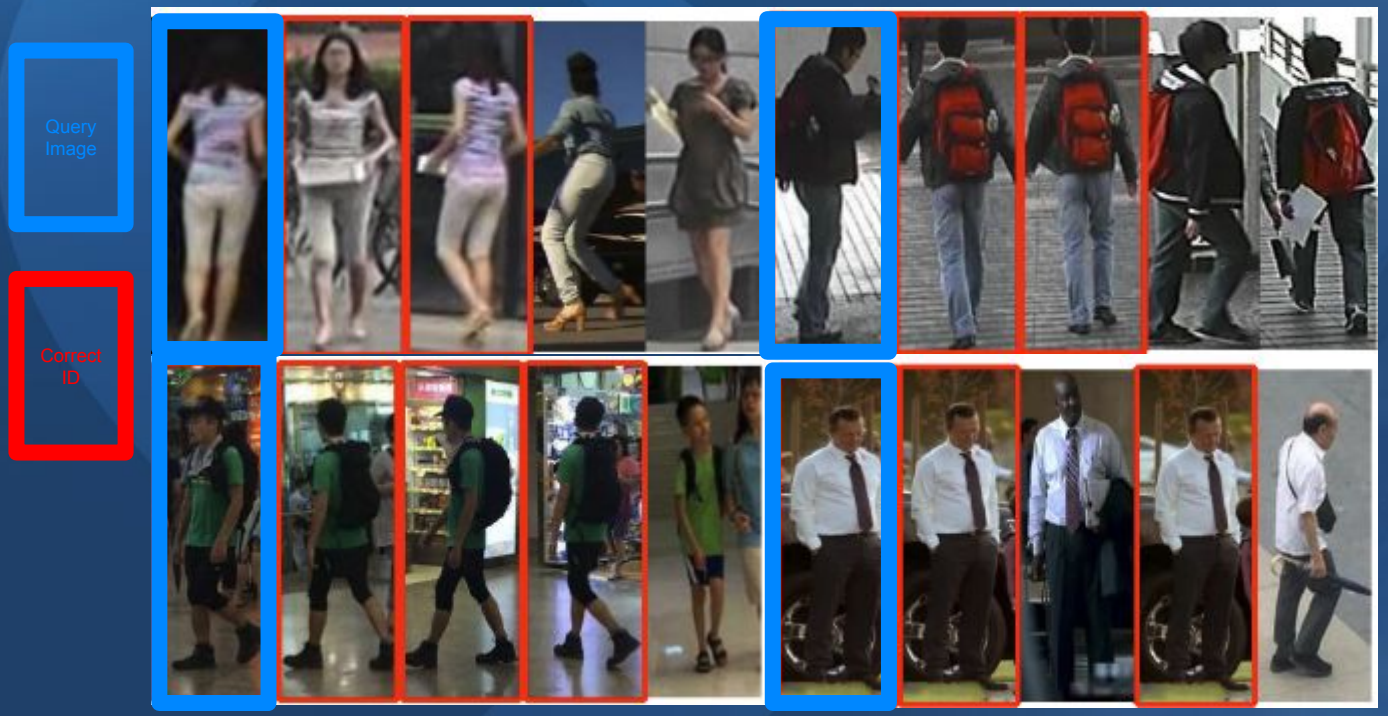
SIGMA™

Region-scale CBRN platform (Chemical, Biological, Radiological, and Nuclear) for real-time detection, identification, and response.

TrustedKeep™
SECURITY PLATFORM

Comprehensive security platform that implements Zero Trust data protections and provides object-level encryption for sensitive data at scale.

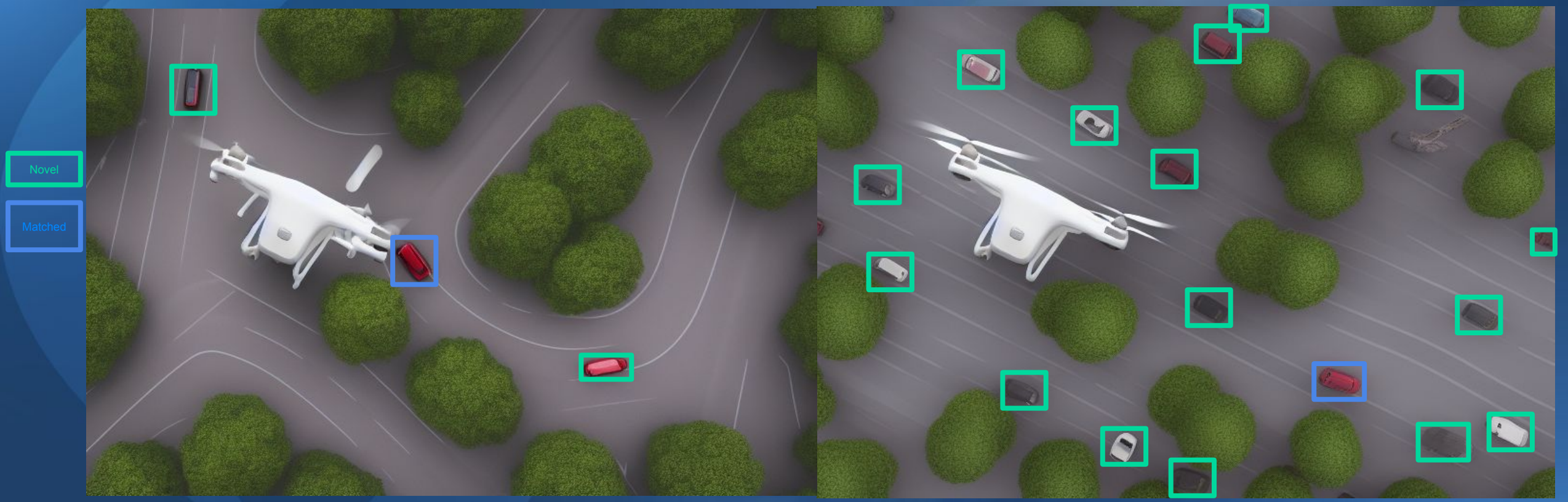
Video Re-ID Challenges



Given left-most query image, top 4 ranked queries.

Zhu et al. (2021) DSSL: Deep Surroundings-person Separation Learning for Text-based Person Retrieval.

- Capturing unique feature representations in the open world is still challenging, even with joint text-image representations
- Confusers from macro-changes still dominate traditional features used in Re-ID
  - e.g. shirt color, uncommon objects like a brightly colored backpack
- This is good enough for many use cases where potential for novel targets and/or adversarial concealment is low
- More robust methods of feature extraction are required, which will consider geometry, pose, illumination, and other unique biomarkers (based on target).



- Geometry- and perspective- aware features for camera in motion
  - Utilizes camera positioning and path to produce robust features useful from a variety of camera & target poses

- Specularity-aware learned features
  - Helps with challenging non-matte targets under different illumination conditions
  - Can potentially generalize to other modes of imaging
  - Leverage phenomenology modeling experience of TST and partners

TST Expertise and Teaming

TST Areas of Expertise

- Machine Learning, Deep Learning
- Computer Vision
- Generic Vision Learning
- Counter-AI
- Photogrammetry
- 3D reconstruction / structure from motion
- Multi-modal imaging systems
- Synthetic data generation
- Software engineering/integration

Complementary Expertise Sought

- Biometrics
- Video data collection, labeling
- Geometric camera projection and inverse projection
- Real-time video processing