

1. **Research Title:** Dismount Tracking
2. **Individual Sponsor:** *List the AFRL research topic sponsor's contact information:*  
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3. **Academic Area/Field and Education Level:** Electrical Engineering and Computer Science / Signal Processing and Tracking (MS or Ph.D. level)
4. **Objectives:** The objective of this research is to develop new Electro-Optical (EO) and/or Radio Frequency (RF) sensing and tracking methods that allow continuous tracking of dismounts in complex urban scenarios.
5. **Description:** The proposed project will develop sensor exploitation algorithms that permit systems to track individual and multiple dismounts operating in complex urban settings. Innovative developments are required to support precision targeting of dismounts in urban environments as well as persistent surveillance. Of particular interest are the development of exploitable EO (to include infrared and hyperspectral) and/or RF dismount features as well as the associated target tracking system. Research could be on individual issues as well as the overall system design. One area of need is development of exploitable features that essentially provide a fingerprint which allows the tracking system to disambiguate dismounts in areas of potential confusion. Exploitable features may take many forms but approaches that allow simultaneous use of spatial and spectral information are likely required to be very successful. Because of the difficult line-of-sight issues in urban terrain, collaborative tracking across multiple sensors is of interest. One particular strategy of interest is joint tracking across a wide area persistent sensor with building or UAV mounted sensors. Public releasable EO, IR, and hyperspectral data are readily obtainable and can also be readily generated by the universities using commercial sensors. Furthermore, ITAR RF and hyperspectral dismount data are available to support the effort. If research is performed in AFRL, existing video tracking and kinematic tracking algorithms could be made available to support the effort.
6. **Research Classification/Restrictions:** ITAR
7. **Eligible Research Institutions:**  
Universities  (DAGSI)                      AFI  (only)