

## Attachment 1 – DAGSI Research Topic Template

**NOTE: Under the Cooperative Agreement, Technical Directorates have three options for topics. First, a topic can strictly be considered in the pool for the state allocation of funding. DAGSI will work across the TDs for this allocation. Second, the TD can be prepared to be a funding partner with the State of Ohio. This would include: providing additional funds to support additional recipients of a topic, or expand the proposers team to include additional members on a topic. Third, the TD may elect to fully fund a topic not selected for State of Ohio funding or to pursue University teams outside the State of Ohio. Contact [Terry.Cunningham.2@us.af.mil](mailto:Terry.Cunningham.2@us.af.mil) for questions**

1. **Research Title:** Reinforcement Learning with Analogical Transfer
2. **Individual Sponsor:**

Dr. Trevor Bihl, AFRL/RYAR  
AFRL/RYAR Bldg 620  
2241 Avionics Circle  
WPAFB, OH 45433-7333  
[Trevor.Bihl.2@us.af.mil](mailto:Trevor.Bihl.2@us.af.mil)

3. **Academic Area/Field and Education Level**

Electrical Engineering (MS or PhD level)  
Computer Science (MS or PhD level)  
Biomedical, Industrial and Human Factors Engineering (MS or PhD level)

4. **Objectives:** Reinforcement Learning (RL) research and development (R&D) advancement through leveraging analogical reasoning
5. **Description:** Reinforcement Learning (RL) has shown incredible abilities for learning appropriate actions to maximize success in an environment. One issue with RL is that the developed RL models are often tailored and useful in only one environment and transferable to other domains. Biological intelligence does not have this limitation and can quickly apply knowledge from one source to another through analogies. Analogical reasoning (AR), whereby learning by analogy is conducted, involves a collection of methods to emulate this biological ability. This project aims to apply AR algorithms to RL to transfer knowledge from one environment, or game, to other. This approach would allow AI systems to quickly learn new environment by leverage experience on similar problems.
6. **Research Classification/Restrictions:** unclassified
7. **Eligible Research Institutions:** Ohio State, Ohio University, University of Cincinnati

**NOTE: Topics submitted to DAGSI must be approved for public release. Need PA Approval**  
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