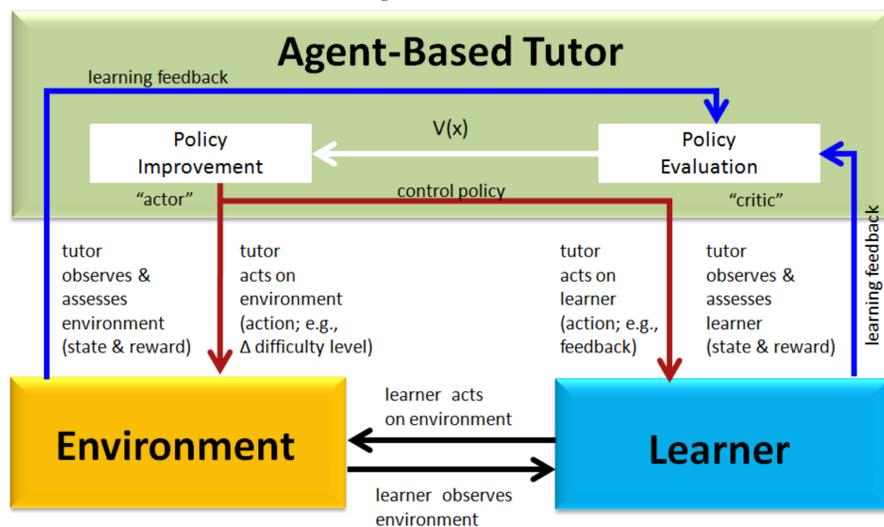


## S&T Campaign: Human Sciences Human Capability Enhancement Training

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## Research Objective

- Develop a Generalized Intelligent Framework for Tutoring (GIFT) including tools and methods to author, deliver, and evaluate adaptive training and education solutions that optimize learning, performance, retention, and transfer
- Significantly lower the cost and skills needed to author effective adaptive instruction



Adaptive Instruction with GIFT

## Challenges

- Create a domain-independent architecture that can be used to author adaptive instruction for a variety of tasks (e.g., marksmanship, combat casualty care, logic puzzles) in different domains (e.g., cognitive, affective, psychomotor, and collaborative)
- Modeling of learners, teams, and optimal instructional strategies/tactics selection methods
- Create authoring tools to enable instructors and researchers to develop adaptive content with minimal computer programming and instructional design skills



Adaptive Training Task Domains

## ARL Facilities and Capabilities Available to Support Collaborative Research

- Powerful suite of domain-independent adaptive training and education authoring tools available online.
- Free registration and free hosting for course and experiment authoring materials.
- A selection of papers regarding GIFT are:

Goldberg, B., Sottolare, R., Sinatra, A.M., Brawner, K., and Ososky, S. (2015). Workshop on Developing a Generalized Intelligent Framework for Tutoring (GIFT): Informing Design through a Community of Practice held in conjunction with Seventeenth International Conference on Artificial Intelligence in Education (AIED 2015), Madrid, Spain, June 2015.

Sinatra, A. M. (2015, February). The Research Psychologist's Guide to GIFT. In *Generalized Intelligent Framework for Tutoring (GIFT) Users Symposium (GIFTSym2)* (p. 85).

Sottolare, R., Graesser, A., Hu, X. & Brawner, K. (Eds.). (2015). *Design Recommendations for Intelligent Tutoring Systems: Volume 3 - Authoring Tools & Expert Modeling Techniques*. Army Research Laboratory, Orlando, Florida. ISBN: 978-0-9893923-7-2.

- ARL's Adaptive Training Team is available to assist with use of Cloud GIFT - Virtual Open Campus
- GIFT has been used to conduct experiments, provide adaptive instruction, and promote evaluation of tools and methods

## Complementary Expertise / Facilities / Capabilities Sought in Collaboration

- The Adaptive Training Team has expertise in:
  - Human Factors and Cognitive Psychology research methods
  - Cognitive modeling techniques that account for data-driven knowledge and skill representations
  - Instructional management and tutorial planning practices based on uncertainty and probabilistic modeling techniques such as Markov Decision Processes
  - Domain modeling practices and ontologically driven architecture implementations
  - Sensor technologies that provide unobtrusive assessment of individuals and shared states in relation to learning, performance, and retention
- We are interested in collaborating with researchers and instructors in varying domains (both well-defined and ill-defined) who would like to conduct experiments or create adaptive instruction using GIFT
- We are interested in feedback from instructors and researchers about GIFT and authoring tools to improve the user experience
- Learn more about GIFT at: [www.GIFTtutoring.org](http://www.GIFTtutoring.org)



Books in the Adaptive Tutoring Series