Research Topics and Applications

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Research Focuses and Application Domains

- **Generic Research Focuses** (GRF)
  - Semantic Interactions (SI)
  - Multimodal Interactions (MI)
  - Semantic Computing Enhanced Multimodal Interactions (SCMI)
  - Knowledge Graphs: Models and Algorithms Implementations (KGs)
  - Generative AI: Methods and Algorithms Implementations (GAI)
- **Applied Researches**
  - Integrate GRF with Education Technology to Enhance Teaching and Learning Experience
    - Adaptive and Generative Learning Materials, Learning Processes and Learning Analytics
  - Integrate GRF with the Software System Design, Analysis, and Implementation
    - Software Analysis, Design, Coding, Debugging, and Re-engineering
    - Domain Specific Training Systems
    - Pre-Construction Analysis and Cognitive Manufacturing Process
    - Code Migration in the Clouds
    - Monitoring Systems for Nature Environment and Virtual Labs

Research Focuses and Application Domains

- Generic Research Focuses (GRF) --- **Thesis, Project, or Essay**

  Based on your interest and experience, we work together to identify the research focuses and requirements, and generate research questions and plans

  - **Semantic Interactions**
    - represent advanced approaches to user interfaces, where actions are understood as meaningful, high-level expressions of intent rather than simple commands
    - model user intent as semantics with contextual interpretation to enhance implicit and explicit manipulation with bidirectional interaction, and adapt to cognitive and analytical processes
  - **Multimodal Interactions**
    - refers to systems that allow multiple types of input modes, such as speech, gesture, touch, and eye movement, creating a richer, more natural user experience.

Research Focuses and Application Domains

- Generic Research Focuses (GRF) --- **Thesis, Project, or Essay**
  - **Semantic Computing Enhanced Multimodal Interactions**
    - combine semantic interpretation with multimodal input fusion and intent recognition across multiple modalities
    - optimize semantic interpretation across multiple modalities
    - adapt to individual user preferences and behaviors through semantic interpretation across multiple modalities
    - use semantic context to improve cognitive load and task efficiency across multiple modalities
  - **Knowledge Graphs**: Models and Algorithms Implementations
  - **Generative AI**: Methods and Algorithms Implementations
- Applied Researches --- **Thesis, Project, or Essay**
  - Based on your interest and experience, we work together to identify the research focuses and requirements, and generate research questions and plans

COMP Courses and Prerequisites Related to the Topics

- **COMP610**: Selected Topics in Software Engineering
- **COMP648**: Advanced Topics in Human-Computer Interaction
- **COMP617**: Designing Real-Time Software

- COMP658: Computational Intelligence
- COMP659: Statistical Language Processing for Text Analytics
- COMP667: Multiagent Systems
- COMP682: Data Mining

- COMP676-80: Thesis
- COMP697-99: Integration Project
- COMP696: Master's Essay

Question →