CISE Involvement within the

I/UCRC: Industry/University Cooperative Research Centers Program

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I/UCRC: CISE Outline

- CISE Budget
- CISE centers collaboration with Engineering
  - Examples
  - Multi-University: WIKI
- Special Projects: Status on
  - Ask Alex
  - Avatar
  - Life Form Management System
- Reaching Maturity
  - Examples
- More examples
  - Reconfigurable Computing
  - IMS students
IUCRC: CISE

CISE Budget

• On the rise

• Desires
  – Beyond the moon
  – More collaboration
  – More Tie (Corbi) projects
Example: Jose & Flaura

- CAC: Center for Autonomic Computing (UF) &
- CChIPS: Child Injury Prevention Studies (Children’s Hospital)
IT Appliance for Remote Collaborative Review of Mechanisms of Injury to Children in Motor Vehicle Crashes

Distributed asynchronous collection of content for crash reviews consistently organized across multiple cases

Secure, remote participation in specific case-review meetings,

Live communication (written or verbal), multimedia (slide presentations/images), and use of Web resources;

Archival and post-review access of case reviews for follow-up activities
Collaborative Projects: ENG & CISE

Bill & Janis

• Friction Stir Center
• e-Design

– Multi-University Workbook WIKI
Collaborative Projects: ENG & CISE

Antonio & Jay

• Reinforced Structures Center &
• Intelligent Maintenance Systems
  – Prognostic Indicators for Bridge Repair
Status of Ask Alex

• Functional for planning grants knowledge
• Knowledge somewhat outdated for other subjects
• Objectives:
  – Bring it to current knowledge throughout its entire breadth and depth
  – Make it available through the web
Status of Alex Avatar

- Avatar currently capable of answering questions on planning grants
- Interaction quite lifelike
- Facial Features more lifelike
- Uses Alex’s recorded voice as an experiment
- Conversation more or less structured
- Can be interrupted
- Remembers things from earlier in the conversation and from previous conversations
Special Projects

07-03916 & 0703927 Collab Rsch: Towards Life-like Computer Interfaces that Learn
Avelino Gonzalez & Jason Leigh, UCF & UIC

- Develops naturalistic interfaces to computers taking advantage of rich nuanced
  interactions that occur between human-to-human communications.
- Enables rapid production of digital representations of humans consisting of facial
  expressions, physical mannerisms, speech recognition and synthesis, and limited
  knowledge capture.
- Makes use of this capability by developing a digital representation of a retiring NSF
  program manager to develop digital representations of humans, consisting of facial
- Videogame technology today can capture general appearances, but not subtleties of voice
  inflections, body language, or inherent knowledge, enabling these digital representations
  to not only act, but think, like their human counterparts.
- When perfected, this approach can be used to create digital archives of intelligent and/or
  well-known people of our time – scientists, engineers, politicians, artists, or retirees with a
  rich history of corporate knowledge – enabling one to talk with them, learn from them, be
  entertained by them, or inspired by them, long after they have retired or passed away.
- Technology can therefore also be thought of as a way to record corporate knowledge so
  that the valuable experience and knowledge of retirees are permanently retained.
Status of LIFE form Management System

- Upgraded website – more features
- LIFE forms can now be edited by members
- Evaluations can now be submitted through cell phone texting
  - For situations where Internet access not available during meeting.
- To be demonstrated during breakout session in conference
- See Kate Ryan for info about time and location
CISE I/UCRC Reach Maturity

Examples

CITeR
U West Virginia & U Arizona

IUCRC enables FBI Biometric Center of Excellence

- Center pioneers building blocks that enable the recognition of individuals based on a mix of data from multiple sensors and different physiological biometrics (iris, fingerprint, palmprint, face, voice, etc.) all of potential varying quality
- Valuable ability to identify individuals from a diverse set of partial or incomplete information
- Useful to law enforcement, homeland security, defense, global identity protection, etc.
- CITeR is the basis of an FBI Center of Excellence at WV &
- A Homeland Security Center at U AZ
CHREC: Hi Performance Reconfigurable Computing
U FL, GWU, BYU, VaTech

- Supercomputer Novo-G, likely the most powerful computer of its kind became operational in July 2009
- Name: from “make anew, change, alter” & “genesis”
- Reconfigurable computers can rearrange its internal circuitry to suit the task at hand &
- Its internal circuitry like LEGO blocks, creating the most appropriate architecture for each assignment
- 10-100 times faster using 5-10 times less energy
- Applications range from space satellites to research supercomputers
CISE I/UCRC Reach Maturity

CAKE: Center for Advanced Knowledge Enablement  FIU & FAU

• An application programming interface has been developed within CAKE to easily enable temporal querying visualization of scientific data overlaid on maps and geospatial data.

• Example application: environmental monitoring such as that performed by our nation’s water management districts

• Utilizing the TerraFly geospatial data query and visualization tool, technology allows, for example, identifying a lake, analyzing data streams of all the water gauges in its vicinity, plotting time functions of average water level and of all water flow, & animating water levels on a graph by colorizing a map.
IMS: Intelligence Maintenance Systems
U Cincinnati, U Mich, Missouri U of Sc & Tech

• IMS students won first place in competition against professionals