IRIT (UMR 5505 CNRS-INP-UPS-UT1)
Image Synthesis and Virtual Reality Group

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IRIT

- UMR 5505 CNRS - INPT - UPS – UT1
- 200 faculty staff and researchers, 60 engineers, 30 administrative
- ~120 PhDs students in 2005 (~90 PhDs in 1998/2001)
- Computer sciences teaching: UPS, INP, UT1, UTM
- Active presence in IT scientific communities
- Important industrial partnership
IRIT research areas

- Information analysis and synthesis
  - Image processing / analysis
  - Image synthesis and Virtual Reality
  - Speech processing
  - Text analysis and computational linguistic
  - Video

- Data indexing, retrieval and storage
- Interaction, autonomy, dialogue, collaboration
- Reasoning and decision
- High performance computing
- Architecture, systems and networks
- Safe software development
IRIT research areas

- Federated projects
  - Dialogue
  - Degraded Interaction
  - SIGMA
  - TLSE

- Technological platforms
  - PRETI: research and experimentation in information processing
  - PREVI: virtual reality and interaction
  - RFIEC: information search and knowledge extraction
  - TLSE: grid computing
Image Synthesis and Virtual Reality

- Modeling
  - Complex surfaces, sketch based
  - Properties, constraints

- Rendering
  - Material and Lighting simulation
  - Real-time rendering

- Animation
  - Motions
  - Behavioral simulation

- VR & Interaction
  - Multimodal, 3D
  - Multi-user / distributed
Staff

Professor: Yves Duthen, Jean-Pierre Jessel, (René Caubet)

Associate Professor: Véronique Gaildrat, Mathias Paulin

Assistant Professor: Loïc Barthe, Alain Berro, Hervé Luga
    Patrice Torguet, Stéphane Sanchez, Cédric Sanza.

Engineer: Roger Pujado

2 post-doc:
    Anca Alexe, Gaël Guennebaud,

19 PhD students
Master students
Staff

- PhD students
  - Faly Andriamanankaovy
  - Fenohery Tiana
  - Andriamanampisoa
  - Mathieu Larive
  - Chaouki Maiza
  - Forest Vincent
  - Vincent Vivenloc
  - Tran Trung Hau
  - David Panzoli
  - Marco Ramos
  - William Tambellini
- Arturo Chavoyaz
- Nicolas Lassabe
- Julian Alvarez
- Nelly de Bonnefoy
- Méva Dodo
- Souad Merhebi
- Wafaa Abou Moussa
- Andriamasinoro
- Rahajaniaina
- Samir Torki

- Master students
Modeling

- Geometric modeling
  - Subdivision, implicit surfaces
  - Sketch based

- Declarative modeling
  - Properties
  - Constraints
    - Genetic Algorithms
    - N-CSP extensions

- Procedural modeling
Rendering and visualization

- Lighting simulation
  - Light/material interaction
  - Simulation of radiative transfers
  - High spectral resolution (visible, IR, radar...)
Rendering and visualization

- Real-time rendering
  - Distributed rendering
  - GPU
  - Point based rendering

- High resolution rendering
  - Display wall
Animation
Artificial Life

- Motion Control Methods
  - Procedural, direct/inverse kinematics
  - Motion capture and editing
Animation
Artificial Life

- Complex behavior simulation
  - Autonomous agents: reasoning and behavior
  - Auto adaptation, learning
  - Collaboration, communication
  - Evolution, emergence
    - multi-criteria optimization
    - GA / GP / Classifiers / MAS
Distributed Virtual Reality

- Collaborative engineering
  - Virtual prototyping
  - From CAD to digital factories
  - MIDI (EADS CCR)
- Cooperative Distributed Simulation
  - Distributed applications
  - Communication filtering
  - Interoperability
Virtual/Augmented Reality
3D & Gesture interaction

  - Data Glove, 6DOF mouse

- Hand tracking
  - Video
  - Motion/ configuration recognition
Virtual/Augmented Reality
3DI & Tangible interfaces

- Mixing Images
  - Reality / virtuality
  - Optical or video see-through

- Merging
  - Occlusion
  - Registration
    - Geometry
    - Photometry
  - Reality modification
    - Lighting
    - Occlusion
Large data set: Interaction Visualisation
PREVI: virtual reality and interaction platform

- Available for:
  - IRIT research groups and projects
  - Academic collaborations
  - Industrial collaborations

- Devices:
  - For visualisation (HMD, large display, stereo goggles...)
  - For interaction (gesture, motion capture, force feedback...)

- Connections
  - Storage servers
  - Grid computing
PREVI devices