



2ND AND 3RD YEAR SPECIALISATION

VIRTUAL REALITY

Acquire a thorough grounding in computer science and real 3D image synthesis, as well as in the related disciplines that contribute to building effective immersive applications: cognitive science, mechanics and biomechanics, computer vision and human-machine interaction. A comprehensive course that reflects the evolving needs of companies in Virtual Reality (VR) and Augmented Reality (AR), and, through extensive hands-on experience, provides expertise in IT projects.



COURSE CONTENT

- > C++ programming
 - > Fundamentals of virtual reality
 - > 3D real-time computer graphics
 - > From physical geometry to 3D virtual models
 - > 3D interaction
 - > Industrial software development
 - > Computer vision and augmented reality
 - > Scientific visualization
 - > Project 1
- > Advanced concepts for virtual reality and augmented reality
 - > Hands in VR: simulation and interaction in virtual reality
 - > Collision detection and haptic feedback
 - > Conferences
 - > Project 2
 - > Internship





INDUSTRY SECTORS

- > Digital Services companies
- > Aeronautics
- > Automotive
- > Shipbuilding
- > Cinema, video games
- > Simulation and VR publishing
- > IT Services companies

CAREER PROSPECTS

- > Virtual reality engineer
- > Real-time 3D developer (video games, cinema etc.)
- > RV/Augmented reality (AR) applications designer
- > R&D engineer
- > RV/AR Consultant
- > Project Manager (RV / video games)
- > Image analysis and design engineer
- > Design, Integration and Development Engineer

TEACHING STAFF

HEAD OF SPECIALISATION:

Jean-Marie Normand

CENTRALE NANTES LECTURERS:

Damien Chablat, Jean-Marie Normand, Myriam Servières, Vincent Tourre, Franck Mars, Florent Laroche, Isabelle Milleville, Alban Leroyer, Rebecca Fribourg

EXTERNAL PARTNERS:

CLARTÉ
Innia équipe Hybrid*
Airbus*
Renault*
PSA*
Dassault Aviation*
Naval Group*

**During the conference week in Laval*

CONTACT:

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EXAMPLES OF PREVIOUS PROJECTS

- > Pseudo-haptic feedback
- > Augmented reality planetarium
- > Automatic gesture recognition through motion capture
- > Origami production support in augmented reality
- > Capture of the user environment for incorporation in a virtual reality game
- > Automatic land generation in 3D
- > Production of mini video games in 3D
- > Interaction metaphor development for urban design in virtual reality
- > Development of a mini serious game for neuropathic pain rehabilitation in partnership with Nantes University Hospital mixing Brain Computer Interfaces and VR
- > Immersive Data Analytics in Unity
- > Video Analysis for Real-time Sign Language Translation
- > Control of a VR "puppet" with hand movements

EXAMPLES OF PREVIOUS INTERSHIPS

- > Development of a brain-computer interface - INSEP, Vincennes
- > Augmented Reality operator guidance - CLARTE, Laval
- > Therapeutic rehabilitation in Virtual Reality - Motekforce Link, Amsterdam
- > Studies and development of augmented glasses - Technicolor, Rennes
- > RV / AR Rendering Engine for the Web - Gingalab, Paris
- > Augmented reality demonstrator for urban mobility - Sogeti, Aix-en-Provence
- > Development of an RV platform for sport - LiveLike, New York
- > Development of advertisements in augmented reality - Wipon, Lille
- > Ophthalmic correction simulator - Essilor, Créteil
- > Augmented Reality for visiting cultural sites - Histoverly, Paris
- > Optimizing Rendering Resources for VR applications, PSA, Paris
- > R&D Audio Programmer, Ubisoft, Paris
- > Virtual Cockpit for the "Rafale", Dassault Aviation, Paris
- > Design and Implementation of a maintenance application in Augmented Reality, EDF, Paris

