Dive into Mobile VR/AR Games

Pre-Meeting
Practical Course
SS 2015
24th March, 2015
Meeting Outline

1. Course Goal
2. Organizational stuff
3. Important Dates
4. Intro to VR/AR
5. Introducing Dive
6. Tasks per Team
7. Tasks Samples
8. Used Technologies
9. Teaming Up
10. Tech-Info Meeting
11. Kick-Off Meeting
12. Semester Time Table
Course Goal

We aim from this course that participants will gain experience in:

- developing computer graphics applications.
- VR/AR basic concepts.
- mobile application development.
- software engineering techniques.
- being a team player.
Organizational Stuff

Course Credits
- 6 Credits for Bs. Inf.
- 7 Credits for M.Sc. Inf.
- 10 Credits for M.Sc. Media Inf.

Participants:
- 24 Bs. Inf.
- 8 M.Sc. Inf.
- 7 M.Sc. Media Inf.

Teams:
- 4 groups for Bs. Inf. (6 in each team)
- 3 groups for M.Sc. (5 in each team) (Including the Special Missions team)

Each team will have three main sub-teams for different topics (Graphics, Game Logic, Content Creation)
**Important Dates**

**On 14.04.2015**
we will register all the participants to ZPA.

Before this date, everyone can quit this practical course without any negative consequence.

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**Tech-Info Meeting:** 31.03.2015 at 14:00  
**Kick-off Meeting:** 14.04.2015 at 14:00
Virtual Reality
Virtual Reality

Virtual reality head-mounted display
• Split-view of the screen.
Mobile Augmented Reality
Mobile Augmented Reality

Tracking as a basic functionality in any AR app
Dive

- From Durovis
- Using a mobile device as a mounted display where the scene is rendered.
Results Samples

• On dive site, many existing samples and games, try them out!

• We will try to build something similar.
Tasks per Team

• **Game Login**

Game concept, interaction techniques such as: collision detection, ray-casting, hand recognition, remote control. Using different SDKs such as: OpenCV, etc…

• **Content Creation**

Creating objects using Blender, implementing procedural texture, using texture databases such as CG-Texture, modifying triangle meshes generated using SfM, etc…

• **Graphics**

Deal with different concepts such as: Phong shading, Normal-Mapping, Cel shading, shadows, Screen space ambient occlusion (SSAO), Motion blur, Glow (Bloom), texture animation, etc…

• **Tracking & Others**

Mobile interface, AR split-view calibration, etc…
Shading: e.g. Phong shading, Cel shading, etc…
Texture Animation
Graphics – Post Processing

Post Processing: e.g. Glow
Post Processing: e.g. Motion blur
Post Processing: e.g. SSAO (Screen space ambient occlusion)
Graphics – Multipass Effects

Multipass Effects (e.g. Shadow Mapping)
Content Creation

Using Blender for creating the application assets (i.e. Geometries, Textures)
Game Scenario

Each team will develop their own game scenario

• Virtual Reality Games or Augmented Reality Games

Depending on the scenario
• AR: Using of the Localization framework we provide
• VR: Using of different localization methods (e.g. mobile sensors)

• Possibility for multi-players scenarios

Interaction (as an example):
• Basic physics: e.g. gravity, collision detection.
• Triggered events
• Multiplayers
• Basic Hand recognition
• Remote Control
Used Technologies

Developing for mobile phones with iOS

Handling Graphics:
- OpenGL ES 2.0 / 3.0

Creating Content:
- Blender (etc …)

Source Control:
- git

Used Devices:
- Dive, etc…
Organizational stuff

Find yourself a team

Sign NDA

Get your account (Later on)
Important dates: Tech-Intro Meeting

Tech-Intro Meeting

Save the date
31.03.2015
14:00 – 15:00

It will be about:

- An Introduction to Computer Graphics
- An Introduction of Project Management: Git
- Showing few working basic sample applications
- A brief theory about the localization framework
Important dates: Kick-Off Meeting

Kick-Off Meeting

Save the date
14.04.2015
14:00 – 15:00
Your first task.

Each team will present their:
- App/Game Idea
- Design Proposal:
  - Theme (including Sketches)
  - Effects (Graphics & Physics)
- Work Distribution
- Milestones / Plans
Timeline

Beginning of SS15

Kick off meeting
  Presenting your idea and first draft (Sketch)

Application Specification:
  Class Diagrams
  Rendering Pipeline
  Game Logic Integration
  Scene File Format
Timeline

During the semester

Coding
Communication between groups
Integration & Testing

Present your progress in each milestone meeting

Progress report via e-mail (bi-weekly!)
Optional: Individual meetings (appointment)
Timeline

Milestone Meetings

3 milestones meetings during the semester

At each:
   teams present their progress

Dates will be announced on the kick-off meeting
Dive into Mobile VR/AR Games  
Practical Course SS 2015  
Computer Graphics and Multimedia

Timeline

End of semester

Final Software  (End of Semester, TBA)
Presentation and Demo  (Templates and Instructions will be provided)
Report and Video
Available Resources

5 Devices
7 Different devices
Enough
So far, that was all from our side

Any Questions?