<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Lecture</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1.</td>
<td>Wed Sept 03</td>
<td>Lecture 1</td>
<td>Intro</td>
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<td>13-15</td>
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<td>2.</td>
<td>Fri Sept 05</td>
<td>Lectures 2-3</td>
<td>Group Formation and brainstorming</td>
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<td>15-19</td>
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<td>3.</td>
<td>Wed Sept 10</td>
<td>Lecture 4</td>
<td>Proposals</td>
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<td>4.</td>
<td>Thu Sept 11</td>
<td>Lecture 5</td>
<td>Feedback on proposals</td>
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<td>10-12</td>
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<td>5.</td>
<td>Mon Sept 15</td>
<td>Lecture 6</td>
<td>Hello World! Demos</td>
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<td>8:30-10</td>
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<td>6.</td>
<td>Thu Sept 18</td>
<td>Lecture 7</td>
<td>Demo Day and ForskarFredag Planning</td>
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<td>10-12</td>
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<td>7.</td>
<td>Wed Sept 24</td>
<td>Lecture 8</td>
<td>Demo Day!!!</td>
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<td>14-16</td>
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<td>8.</td>
<td>Thu Sept 25</td>
<td>Debaser Invation</td>
<td>Setup 16:00 – 20:00</td>
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<td>16-20</td>
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<td>9.</td>
<td>Fri Sept 26</td>
<td>Debaser Domination</td>
<td>ForskarFredag 2014!!!</td>
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<td>8-18</td>
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<td>10.</td>
<td>Mon Sept 29</td>
<td>Lecture 9</td>
<td>Reflections of ForskarFredag</td>
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<td>11.</td>
<td>Wed Oct 8</td>
<td>Lecture 10</td>
<td>The past and future of YA3 and PodRacer</td>
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<td>13-15</td>
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<td>Mon Oct 13</td>
<td>Lecture 11</td>
<td>Epson Moverio – Project 2 industrial sponsor</td>
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<td>8:15-10</td>
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<td>16-23</td>
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<td>15.</td>
<td>Thu Oct 30</td>
<td>Kistamässan Domination</td>
<td>COMICON 2014!!!</td>
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<td>-Sun Nov 2</td>
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<td>16.</td>
<td>Tue Nov 4</td>
<td>Lecture 13</td>
<td>Reflections on ComiCon</td>
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<td>17.</td>
<td>Wed Nov 5</td>
<td>Lecture 14</td>
<td>New groups</td>
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<td>18.</td>
<td>Fri Nov 7</td>
<td>Lectures 15-16</td>
<td>Epson Moverio Workshop</td>
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<td>Tue Nov 11</td>
<td>Lecture 17</td>
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<td>20.</td>
<td>Tue Nov 18</td>
<td>Lecture 18</td>
<td>Feedback on proposals. Early hello world demos</td>
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<td>21.</td>
<td>Tue Nov 25</td>
<td>Lecture 19</td>
<td>Hello world Idemos</td>
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<td>22.</td>
<td>Tue Dec 2</td>
<td>Lecture 20</td>
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<td>23.</td>
<td>Thu Dec 4</td>
<td>VIC Invation</td>
<td>Prepare Open House</td>
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<td>24.</td>
<td>Fri Dec 5</td>
<td>Open House</td>
<td>AGI14-VIC Open House</td>
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<td>15-19</td>
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</table>
1. This week:
   – Thursday CGI demos

2. Proposals
   1. LasAR
      • Carl
      • Anton
      • Johan S.
      • Ludwig
      • Christoffer
   2. DuelAR
      • Philip
      • Søren
      • Axel
      • Daniel
   3. WeathAR
      • Linnea
      • Stefan
      • Johan
      • Mattias
      • Oskar

2014/11/05
Proposal for LasAR

Carl
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Anton
awarnhag@kth.se

Johan
johansto@kth.se

Ludwig
ludwigpe@kth.se

Christoffer
cwiss@kth.se

Advanced Graphics and Interaction
AGI14
2014/11/11
Motivation

• *We* want to play lasertag again
• *You* want to play lasertag again
• We want to learn about Android development, the Wikitude API and the interaction between multiple Moverio’s.
• AR interaction is not that fun today. We aspire to create a fun and interactive experience for the users!
Goals and Challenges

• Goals
  – Multiplayer.
  – Interactive and useful 3D-objects in AR.
  – Fun!

• Challenges
  – Accurate tracking of position.
  – Environment modeling.
  – Network.
Related Work

- **PSYCLOPs**
  - Sean Mc Cracken
  - 2014

- **Location based Application for Mobile Augmented Reality**
  - Gerhard Reitmayr & Dieter Schmalstieg
  - 2003

- **Exploring the interaction design space for interactive glasses**
  - Lucero et.al.
  - 2013
PSYCLOPs
Exploring the interaction design space for interactive glasses

- (+) General specifications, issues and user experience using Interactive Glasses.
- (-) Nothing location based, trying to eliminate other interaction other than looking around.
Location based Application for Mobile Augmented Reality

- (+) Indoor location based Augmented Reality application. Tracking relative position.
Methods and Techniques
Thank you!

Questions?

Carl Ahrsjö {ahrsjo@kth.se}
Anton Warnhag {awarnhag@kth.se}
Johan Storvall {johansto@kth.se}
Ludwig Pethrus Engström {ludwigpe@kth.se}
Christoffer Wiss {cwiss@kth.se}
Feedback to LasAR

1. Keep it simple
2. Build a sharp shooting game first as “Hello World” Demo
3. Encapsulate functions
4. Have a working core before you add fanciness
5. Stay away from open problems in computer vision and AI
6. What is your gun?
7. What is your trigger?
8. What will you show on the sight?
9. Will you use a laser pointer?
10. Will you use a reflective vest or other type of marker to clearly identify targets?
11. Use your limited field of view as a game feature, not a limitation
12. Think of the details before you get to work and prioritize
13. XXL crossbows?
14. Indoor localization with 802.11 network triangulation? Really needed?
15. SLAM – simultaneous localization and mapping – be careful!
16. What else can you use for targeting other than computer vision?
17. Remember, this game needs to be played indoors for the demo.
18. CHEAT on the engineering of the infrastructure and focus on the interaction and advanced graphics!!!
Pseudo AR + a new Network Model
Pseudo AR

Overlay VR with assumptions:

• Predetermined Environment
  • stationary players
  • ground, walls etc.
• FoV matching real world
• Exploit imprecision in locating moving objects
Lag Smoothing Network Model

Assumptions:

• Each client experience real-time within a fixed, non-overlapping, area.
Implementation: Epic Spell Duel

Limitations:

- Stationary players at some distance $d$
- Only non-static objects
- Simple Input
Feedback to DuelAR

1. Good idea to exploit imprecision and lag
2. Figure out the simple input you need
3. Perhaps the Leap Motion
4. Perhaps colored gloves and color recognition
5. Check out Erghis
WeathAR

Advanced Graphics and Interaction
AGI14
2014/11/11
WeathAR
VIDEO

• [https://www.youtube.com/watch?v=io0-S9pU6vM](https://www.youtube.com/watch?v=io0-S9pU6vM)
Motivation

- Why leave the house if you can bring the weather inside?
Goals and Challenges

• Live feed: Weather data on location

• Different weather types, what to show etc.
Methods and Techniques

- Wikitude SDK
- Openweathermap.org/api
Thank you!

Stefan Etoh, {etoh@kth.se}
Johan Bäckman, {johba@kth.se}
Linnea Blom, {lblo@kth.se}
Mattias Lönnerberg, {matlon@kth.se}

Mario Romero {marior@kth.se}
Feedback to WeathAR

• Your idea needs refinement
• Why use AR when you can do it with a phone?
• You can control time and space
• Show the past, the future, the seasons
• Show other places on Earth at the current time and at other times
• Show special weather and phenomena (Northen Lights)
• Show weather patterns by bringing them down to ground level
• Interaction? Menus? Buttons? Gesture Commands?
• Use satellite images to recreate realistic clouds?
• Use the stereoscopy on the glasses to get close to the weather
• Control time by speeding it up as in time-lapse videos
Overall Feedback

• LasAR have thought a lot about their project, but have proposed a very difficult project. Simplify and Prioritize.
• DuelAR have thought a great deal about the limitations of the platform and have started the task of incorporating the limitations into the experience. Good!
• WeathAR needs to answer the question: why would you use AR for this?
## Current Hardware Requirements

<table>
<thead>
<tr>
<th>Group</th>
<th>Moverio</th>
<th>Motion</th>
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<tr>
<td>LasAR</td>
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<tr>
<td>DuelAR</td>
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<tr>
<td>WeathAR</td>
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The goal of this assignment is to create four documents on how to present your projects One, including how to run, recover, troubleshoot, and answer technical questions about it. It has two parts. The first part is individual. The second part is in group.

Part 1
1. Write a step-by-step description of how to set up, run, recover, and troubleshoot each of the three projects that are not your own. Do not ask anyone. Do the best you can.
2. Write a script on what to say and in what order to present the three projects that are not your own.
3. Write a number of questions about the project that you have and don't know the answer to.
4. Submit these document here.

Part 2.
1. Create one Google Document per project. Share your files above with project descriptions with everyone that is not part of the project. For example, everyone but 2Pacs share their documents about 2 pacs.
2. Edit and complement each other's knowledge of the project.
3. When you have a completed document, send it to the group members. They will give you feedback, edit your document, fill in the gaps, and submit it here.

Remember: for the Open House, I will create a schedule where I make sure all of you present all the first projects.
Thank you!

marior@kth.se

Questions?