OurCS: Augmented Reality Visualizations of IoT

**DAY 2: Writing a Manual**

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OurCS Event at Indiana University

Oct 26-28, 2018
## OurCS Goes Moth

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
<th>Who</th>
<th>Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fri Oct 26</td>
<td>11a-12.30p</td>
<td>Self-introductions&lt;br&gt;Intro to Sentient Architecture (Katy), Amatria tour (Andreas), Dendrite Moth Field Array, show videos&lt;br&gt;Q&amp;A</td>
<td>VIS/Fab Lab</td>
<td>Katy, Mike, Andreas</td>
<td>- 15 handouts of Dendrite instructions&lt;br&gt;- 15 handouts of Moth instructions&lt;br&gt;- Printouts of Amatria schematics and plans</td>
</tr>
<tr>
<td></td>
<td>2.15-3.30p</td>
<td>Moth building part 1, build base for electronics</td>
<td>VIS/Fab Lab</td>
<td>Mike</td>
<td>15 kits, spargate, crazy long screwdriver</td>
</tr>
<tr>
<td></td>
<td>4-5.45p</td>
<td>Moth building p2, extruding, assemble frond + actuators</td>
<td>VIS/Fab Lab</td>
<td>Mike</td>
<td></td>
</tr>
<tr>
<td>Sat Oct 27</td>
<td>9-10.30a</td>
<td>Intro to laser-cutting, also cut Chevrons</td>
<td>VIS/Fab</td>
<td>Mike</td>
<td>Cut for 30(?) more Moths? How many laser-cutters do we have? Precut elements? Minimize waiting times</td>
</tr>
<tr>
<td></td>
<td>11-12.30p</td>
<td>Manual writing, figure out what to capture in what way</td>
<td>VIS/Fab Lab</td>
<td>Katy</td>
<td>Camera setup for this.</td>
</tr>
<tr>
<td></td>
<td>3.15-3.30p</td>
<td><strong>Group picture!</strong></td>
<td></td>
<td>Andreas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-6p</td>
<td>Manual writing, p. 2&lt;br&gt;Kit construction, impacted by</td>
<td>VIS/Fab Lab</td>
<td>Mike</td>
<td></td>
</tr>
</tbody>
</table>
Amatria Dendrite

Amatria Dendrites, on display in the Luddy Hall Visualization Lab (room 4012), are pieces of living architecture. Each comprises one light sensor (the eye) and actuators such as lights and a strand of shape memory alloy that makes the sculpture move. Software controls the sensor and actuators. Dendrite fields were built in the 2017 ISE Summer camp. See below for events and activities where you can build or view dendrites.

Resources: Amatria Dendrite Manual | Code on GitHub

Amatria Moth

Amatria Moths, on display in the Luddy Hall Visualization Lab (room 4012), are the newest generation of Amatria-related architectural elements. For a limited time you can purchase a moth kit and build one yourself. Kits are $25 and can be ordered at go.iu.edu/moth. See below for additional events and activities where you can build or view moths.

Resources: Amatria Moth Manual

https://cns.iu.edu/amatria.html
Reproducibility is the Hallmark of Science

Ten Simple Rules for Reproducible Computational Research

• Rule 1: For Every Result, Keep Track of How It Was Produced
• Rule 2: Avoid Manual Data Manipulation Steps
• Rule 3: Archive the Exact Versions of All External Programs Used
• Rule 4: Version Control All Custom Scripts
• Rule 5: Record All Intermediate Results, When Possible in Standardized Formats
• Rule 6: For Analyses That Include Randomness, Note Underlying Random Seeds
• Rule 7: Always Store Raw Data behind Plots
• Rule 8: Generate Hierarchical Analysis Output, Allowing Layers of Increasing Detail to Be Inspected
• Rule 9: Connect Textual Statements to Underlying Results
• Rule 10: Provide Public Access to Scripts, Runs, and Results

https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1003285
Writing a Paper vs. Writing a Manual

Anatomy of a Research Paper

https://askabiologist.asu.edu/explore/anatomy-of-an-article
Writing a Manual

Must define
• Audience: High school students
• Delivery Format: Online

Should include
• Title containing “Amatria Moth”
• Author names
• Brief introduction, feel free to use text from [https://cns.iu.edu/amatria.html](https://cns.iu.edu/amatria.html)
• Parts and tools
• Instructions for major assembly steps, tips and tricks, common mistakes
• Trouble shooting
• Acknowledgements
• Author contributions, e.g., photographer, copy-editor
• References, e.g., [https://cns.iu.edu/amatria.html](https://cns.iu.edu/amatria.html)
Story Boarding

https://uxdesign.cc/6-steps-storyboard-for-ux-design-cb0999c1c45d
Story Parts + challenges!!

1. Receive Kit – EXCITEMENT!!! + make sure all parts are there!!
2. Build Electronics Sled + solder!!
3. Connect Electronics Sled to Spar + zip ties!!
4. Connect Moth Sled to Spar – crazy screw driver, way too crazy …
5. Assemble Moth Sled + heat shrink tubing!!
6. Turn it on + WORKS= EXTASY or Does NOT work – what now?

• Daisy chain
• Explore IoT data
• Make your own kit
Story Parts + challenges!!

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2. Build Electronics Sled + solder!!
3. Connect Electronics Sled to Spar + zip ties!!
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• Instructions for major assembly steps, tips and tricks, common mistakes
• Trouble shooting
• Acknowledgements
• Author contributions, e.g., photographer, copy-editor
• References, e.g., https://cns.iu.edu/amatria.html
Divide and Conquer

Let’s Make 5 Teams:

• Photographers—light, composition, purpose
• Story Tellers—Also Title, Author names, Intro, FAQ, etc.
• Content Developers
  1. Build Electronics Sled + solder, Connect Electronics Sled to Spar + zip ties
  2. Assemble Moth Sled + heat shrink tubing
• Testers/Editors/Printers—assemble all parts into one ppt, also prepare group presentation on Sun.