Agenda for Weeks 7-8:

Mon July 11:
Group Meeting – **10:00am RI 104**
Individual Research Work (am)

Tuesday July 12:
Individual Research Work

Wednesday July 13:
Individual Research Work (am)
IBM Research (pm)

Thursday July 14:
Group Meeting – 10:00am RI 104
Surveys and Evaluation – 10:30am RI 105
Individual Research Work (pm)

Friday July 15:
Individual Research Work

Mon July 18:
Group Meeting – **10:00am RI 104**
Individual Research Work (am)

Tuesday July 19:
Individual Research Work

Wednesday July 20:
Group Meeting – 10:00am RI 104
Surveys and Evaluation – 10:30am RI 105

Thursday July 21:
10:00am Check in meeting
10:30am Online and paper based surveys
11:30am Peer leader discussion

Friday July 22
9:30am Check in meeting RI 104

10:00am Final Presentations RI 104
12:00pm Mentor meeting (RI 105 – mentors only)
1:00pm – Exit Interviews (room TBA)
3:00pm – Submission of all required materials
3:30pm – Official end of the site.

Saturday July 23- Departure from Village on your own times

IBM Research Visit!
**Wednesday July 13Th**
leave campus by 12:10pm
### iMagine NSF - Participating Students

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lauren Aguilera</td>
<td>Kean University</td>
<td><a href="http://www.kean.edu/">http://www.kean.edu/</a></td>
</tr>
<tr>
<td>Lashonda Bell</td>
<td>University of Southern Mississippi</td>
<td><a href="http://www.usm.edu/">http://www.usm.edu/</a></td>
</tr>
<tr>
<td>Kimberly Pirate</td>
<td>Montclair State University</td>
<td><a href="http://www.montclair.edu">http://www.montclair.edu</a></td>
</tr>
<tr>
<td>Kristin Soriano</td>
<td>University of Central Florida</td>
<td><a href="http://www.ucf.edu">http://www.ucf.edu</a></td>
</tr>
<tr>
<td>Theerapan Oonlamom</td>
<td>Washington State University</td>
<td><a href="http://www.wsu.edu">http://www.wsu.edu</a></td>
</tr>
<tr>
<td>Terrance Hall</td>
<td>Lincoln University</td>
<td><a href="http://www.lincoln.edu">http://www.lincoln.edu</a></td>
</tr>
<tr>
<td>Douglas Taggart</td>
<td>Rowan University</td>
<td><a href="http://www.rowan.edu">http://www.rowan.edu</a></td>
</tr>
<tr>
<td>Ramy Gerges</td>
<td>Montclair State University</td>
<td><a href="http://www.montclair.edu">http://www.montclair.edu</a></td>
</tr>
<tr>
<td></td>
<td>*Peer Mentor</td>
<td></td>
</tr>
</tbody>
</table>

### iMagine NSF – Weston Scholars

1. Nyah Campbell
2. Mete Erdi
3. Shannon Hardy
4. Ryan Lin
### Participating Faculty and Staff

<table>
<thead>
<tr>
<th>Name</th>
<th>Office Location</th>
<th>Role</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stefan Robila</td>
<td>RI 312</td>
<td>Project Director</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mentor (Kimberly Pirate, Terrance Hall)</td>
<td></td>
</tr>
<tr>
<td>Jerry Fails</td>
<td>RI 309</td>
<td>Mentor (Lashonda Bell, Ramy Gerges)</td>
<td></td>
</tr>
<tr>
<td>Bogdan Nita</td>
<td>RI 243</td>
<td>Mentor (Kristin Soriano, Theerapan Oonlamom)</td>
<td></td>
</tr>
<tr>
<td>Jing Peng</td>
<td>RI 309</td>
<td>Mentor (Doug Taggart, Lauren Aquilera)</td>
<td></td>
</tr>
<tr>
<td>James Zimmerman</td>
<td>Rollins College</td>
<td>Site Evaluator</td>
<td></td>
</tr>
<tr>
<td>Sanjeev Wahi</td>
<td>RI 320</td>
<td>Industrial Advisor</td>
<td></td>
</tr>
<tr>
<td>George Antoniou</td>
<td>RI 306</td>
<td>Participating Faculty</td>
<td></td>
</tr>
<tr>
<td>Beverly Macaluso</td>
<td>RI 301</td>
<td>Department Assistant</td>
<td></td>
</tr>
</tbody>
</table>

---

**Please Complete the following evaluation surveys!!!**

Various activities have passed and we have to receive feedback from you. Please access the surveys below and provide your feedback. Thank you.

**Graduate Studies:**
https://surveys.montclair.edu/survey/entry.jsp?id=1309019725935

**Image Processing**
https://surveys.montclair.edu/survey/entry.jsp?id=1307361002298

**Web Design**
https://surveys.montclair.edu/survey/entry.jsp?id=1307361132127

**Matlab**
https://surveys.montclair.edu/survey/entry.jsp?id=1307360814199

**Pwd:** iMagine11
Summary of Activity: Mid-Program Symposium

On Monday June 27th, the REU students presented their work to their peers. This constituted of a short (20 minutes on average per team) presentation followed by discussions on the progress of work. In addition a draft report was expected. The event allowed everybody to get an insight on the various directions undertaken by the REU students and also a good sanity check on the progress. The meeting was attended by almost all mentors. The feedback received from attendees (both students and faculty) is encouraging. The presentations were also attended by Marco Chang, a iMagine REU 2010 participant and peer mentor.
Summary of Activity: Research Papers

On Thursday July 7, the REU and Weston students were provided with an overview of the research publication process. Dr. Stefan Robila provided information on the available venues for disseminating the research results, on how to evaluate the quality of a publication and how to perform proper literature review and citations.

Summary of Activity: Visit to Videobank

(as provided by Ramy and LaShonda)

On Tuesday June 28, the REU group visited Videobank a company in Northvale, NJ. While VideoBank started off as a small company, its innovative methods to manage and distribute video, audio, still imagery and other digital content has helped it grow into the leading company in Digital Asset Management. Ever since the company was founded over a decade ago (1997) by Louis H. Siracusano Junior, its technologies have been applied to an increasing number of industries. These industries include Sports & Entertainment, Education Medicine and Research, Corporate and Government Archives, Intelligence and Surveillance and Training and Simulation.

Sports and Entertainment-
With consumers demanding more HD content, an increasing number of companies are requesting assistance from VideoBank to help satisfy these demands. By utilizing its innovative methods, VideoBank has found a way to quickly organize and index content from arenas, stadiums and studios around the country for the production of highlight packages, condensed games and on-demand features.

Military and Law Enforcement-
VideoBank has designed and implemented advanced intelligence systems for the United States military. The scope of law enforcement applications which the VideoBank systems ideally apply to is quite large. These include security cameras, traffic cameras and motion sensors as they can all be fed into the same system, allowing officers to monitor several feeds simultaneously and mark areas of interest for review in as convenient a manner as possible.

Training and Simulation-
VideoBank systems are well suited for a variety of training and simulation applications. Materials used for new manager and staff training, including videos, PowerPoint presentations and manuals, can be stored at a single centralized location and made available for simultaneous viewing in
private offices, conference rooms and retail stores around the country. Data tags help streamline the process of searching and retrieving these assets.

VideoBank employees dedicate themselves to meeting the needs of their clients by providing a state-of-the-art product line. While VideoBank software provides the core of the digital asset management solutions, their integration and development teams work hand-in-hand with members of other organizations to design a turnkey solution according to the outlined specifications.

The visit we paid VideoBank has in many ways surprised us. The small company, which opened just over a decade ago, has helped us gain an insight as to what a company with only approximately 30 dedicated staff members is capable of doing. One of the surprises we were introduced to was that VideoBank is actually capable of rivaling giant companies such as General Dynamics; despite its limited staff. One reason VideoBank is able to compete on such a high level is where at most large-scale companies, customers would spend an endless amount of time jumping through hurdles to get someone to fix a technical problem in their system, with VideoBank the customer is in direct contact with the staff. There is no middleman to deal with. This gives customers a stronger feeling of trust and comfort. We were also able to see the advantages of working at a company such as VideoBank. When employed at a large company/corporation, the employees hardly have any autonomy at all. However, this is not the case when working for a small company like VideoBank, where the staff are familiar with each other and their boss, and therefore have a louder voice and thus more liberty.

At first, it was difficult to imagine what kind of work VideoBank did. Managing different forms of digital content such as videos, audios, and still imagery could encompass many different things. However, getting to actually see the company and have explained to us in detail the kind of work they do and system applications they build, we were able to get a better feel of the nature of their work. An example of the different digital media they are required to manage is in the entertainment industry. Whenever an entertainment company like NASCAR or the NHL needs assistance in recording different events, they employ the skill and technology of VideoBank. VideoBank then uses one of its Digital Content Management Tools to provide assistance.

An example of an application built by VideoBank was called Race Control. As the name suggests, it is used to organize digital information which is related to Auto Races in NASCAR events. The application Race Control has many different camera angles which are all viewable by the VideoBank staff assigned to collecting and managing the different digital information. Equipped with these camera angles and a timeline where they can record events, they zoom in on and record incidents which are of significance to the audience, while also capturing key details during the incident.
The Management Tools used seemed to be based on a general model which was slightly adjusted to fit the demands of a specific application. Another example of a Digital Content Management Tool which we saw during our visit was the NHL Logger which was used to manage and record digital information relevant to NHL games. The NHL Logger - like Race Control - had a Mark In (before an incident) and Mark Out (after an incident) command which were used to record the digital media, such as virtual video clips, that took place between the time period of those mark in and mark out commands. The virtual clips and other relevant digital information were then sent to the end users who paid VideoBank in return.

What the VideoBank employees implied was the most important sector of their work was that related to the Department Of Defense. Apart from the obvious reasons of helping The United States Of America by aiding the Department Of Defense with collecting and managing vital intelligence data, VideoBank has been able to move to a place where approximately 80% of their revenues come from working with the Department Of Defense.

VideoBank employees have a passion that exudes effortlessly when they talk about their work. We believe it is because they believe in the services they are providing to their customers, and they are definitely empowered by owner and managers. VideoBank is a company of great enthusiasm and innovation.

**Summary of Activity: Visit to Vision Research**

(as provided by Kim and Terrance)

On Thursday June 30, the REU group visited Vision Research in Wayne, NJ. Before Vision Research was acquired by its new parent corporation, Ametek, Vision Research’s humble beginnings started out in 1950 as Photographic Analysis Company. This company dealt primarily with the education of their numerous clienteles in the process and application of high speed photography for their specific needs. Forty two years after the creation of Photographic Analysis Company, Vision Research was formed as a separate entity from its original parent corporation. The Vision branch was formed to specialize in and manufacture a class of electronic imagers that did not rely on physical photographic film for the capture and production of high speed imaging.

Currently, Vision’s Phantom camera line is renowned for its excellence as an engineering tool, possessing the capability of recording over a million frames per second with their digital equipment, actions that are too fast for the human eye to follow. Since the Phantom line of digital processing is able to slow life
down to incremental actions, Vision’s products are primarily used for high speed digital imaging and their application towards research and entertainment in media. A few examples of how their footage is used are the capture of car crashes to determine the physical transfer of force over a vehicles structure to the trajectory of ballistics in determining their flight path and designs.

Vision’s closest competitor is a Japanese company called NAC. However, even among the competitors in the high speed imaging market, Vision Research is legendary for the quality of image that comes from their high speed cameras. Not only is their photo imaging of excellent quality, Vision boasts superior software for managing digital imaging as well. Their equipment has been used in the Super Bowl, sports and entertainment, and the World Cup. Their current motto is, “When it’s too fast to see and too important not to”.

Plant Tour:

Wayne, a mechanical engineer and for the day, our tour guide, gave us an exclusive look into Vision’s manufacturing plant. First, we observed the assembly of circuit boards. We then viewed how the resistors and capacitors were made. With the advancement of technology today, the capacitors that Visions places into their cameras and phones now are the size of a grain of sand. The plant also has a 3-D printer to help in the design and construction of numerous camera parts such as the casing. After observing the 3-D printer in action, Wayne led us to the engineering and software divisions of the building and spoke of the programs that were used to process and dissect the imaging of their high speed cameras. He also informed our group that the company does in house reparations for all their cameras.

Camera Demo/Experiment:

As a presentation of what their equipment can do, one of Vision’s newest cameras was attached to a laptop for power and displayed a video on one of their 3-D television. The quality of the imaging was visually crisp and exceptional. Our group also had the chance to see the actual sensors from Vision’s cameras and other chip wafers. For three dimensional commercials and shoots, two cameras need to be used to record the footage. The cameras act like a human beings eyes and capture what the left and right eye observes. With this technique, Vision is able to make videos 3-D by
combining the captures from each. We were shown many examples of what can be done with their Phantom cameras and wore the 3-D glasses needed to watch them. One is able to set many different factors such as exposure time for the sensor on the cameras.

**Industry Trips Update**

At the moment, we have completed three of the four planned industry trips. A last one is scheduled for next week. The following are the task leaders for each trip. For everybody’s convenience I also added links to the companies’ websites. The current dates for the visits are also provided where available:

- **SRI–Sarnoff, June 15Th, Doug, Lauren – DONE –**
- **Vision Research – June 30Th, Kimberly, Terrance – DONE**
- **Videobank – June 28Th, Ramy, LaShonda – DONE**
- **IBM Research, July 13, Kristin, James**
  

**Tshirt**

I hope you liked the Tshirt. I am very impressed with your choice of design and I want to thank you for managing this task among yourselves!

**Upcoming Activities: Week 8**

The following is a tentative list for the tasks you must complete by the end of your stay at MSU. It is possible that this list will be updated next weekend, as more details will be finalized. In accordance with the REU iMagine goals, your research project work will have to be summarized in a report and in a presentation.

The following is a **checklist of the activities you must complete** before leaving campus:

a) You have to **submit the final version of the presentation** to me no later than **10am on Friday July 22**. You should also post a copy of your presentation on your website. Please prepare a 15 minute / person presentation that includes enough details on the problem you worked on as well as your contribution. It is advisable to clearly indicate which parts (if any) were your individual contributions vs which parts were done as a research team or as a discovery work. Most of the faculty mentors will be present at your presentation. I also anticipate that the department’s chair and the college's dean will also attend the presentation.

b) You have to **submit a completed report** to me no later than **1pm on Friday July 22**. The report has to be very explicit in describing the problem you worked on, the methods you used, and the progress you made. Please include every reference you used, printed or
online. If any code was also generated, please submit a copy of the code as an archive to me. If need additional help with formatting it, please request it ASAP.

c) You must send the presentation and report drafts to your mentor and request feedback. Please do not do this on Wednesday night of the last week, as the time will be too short.

d) **Your personal webpage** must be complete on Thursday evening (July 21st). The webpage should contain the project description, list of papers and literature used, weekly blog, final presentation, as well as any additional materials you find fit.

e) The **main iMagine webpage** must be finalized. I request that you **complete this page** no later than Thursday evening (July 22). Note that there are four people in the web team.

f) **Complete ALL online surveys** no later than Thursday evening (July 22).

g) **Complete the ATGS survey and other paper based surveys** on Thursday July 14 at 10am (RI 104). This will be provided to you.

h) **Complete the exit interview with Dr. James Zimmerman** on Wednesday July 20 (am)

i) **Deliver the presentation** on Friday July 22 (RI 104). Time was set aside between 10am and noon.

j) **Attend the peer leader round table** on Thursday July 21 at 11:00am. In this activity you are asked to discuss your summer experience and provide feedback on your participation. Summarize this feedback and communicate this to Ramy. Ramy must provide a 1-2 page summary by end of Friday July 22.

k) **Create a zip file of your work** that includes the presentation, report, and any code and data. Copy the zip file in the folder REU2011 available on the flash drive marked REU2011 and provided by me. Do this no later than Friday July 22 at 1pm.

l) **Copy your photos**. Collect the photos that you took during your stay at Montclair and put them in a folder with your name in the in the folder REU2011 available on the flash drive marked REU2011 and provided by me. Do this no later than Thursday July 21 at 8pm.

m) **Submit company visits reports**. IBM Research – Kristin/James you are required to submit a visit report no later than Friday July 22 at 1pm.

n) **Clean up your work environment**. Please ensure that the computer that you used is being returned in good order. Throw away any trash or unwanted materials. Return all books or other materials to their owners. Do this no later than Friday July 22 in the evening.

o) **Return the digital projector** to the lab by Thursday July 21.
p) **Attend the final exit interview on Friday July 22** (after 1:00pm).

q) **Return the lab swipe cards / ID cards and parking hashtags to Ramy** no later than Saturday morning (July 23). Ramy should return the cards to me in the same day.

r) **Check out from the Village** no later than noon on Saturday July 23. Please do this directly through the Village office. Make sure the rooms and the entire apartment are left in the same way you found them with all the furniture in its right place. Make sure the linen provided is returned. Also, ensure all keys and the access card are returned. Failure to do so will result in financial penalties.

s) **Confirm your arrival.** Upon your return home, please send me a quick message confirming your safe arrival.

Please understand that all items above are essential to the program's well being and that I am counting on you to pull this last effort. Failure to complete the tasks above will result in the last check being held.