

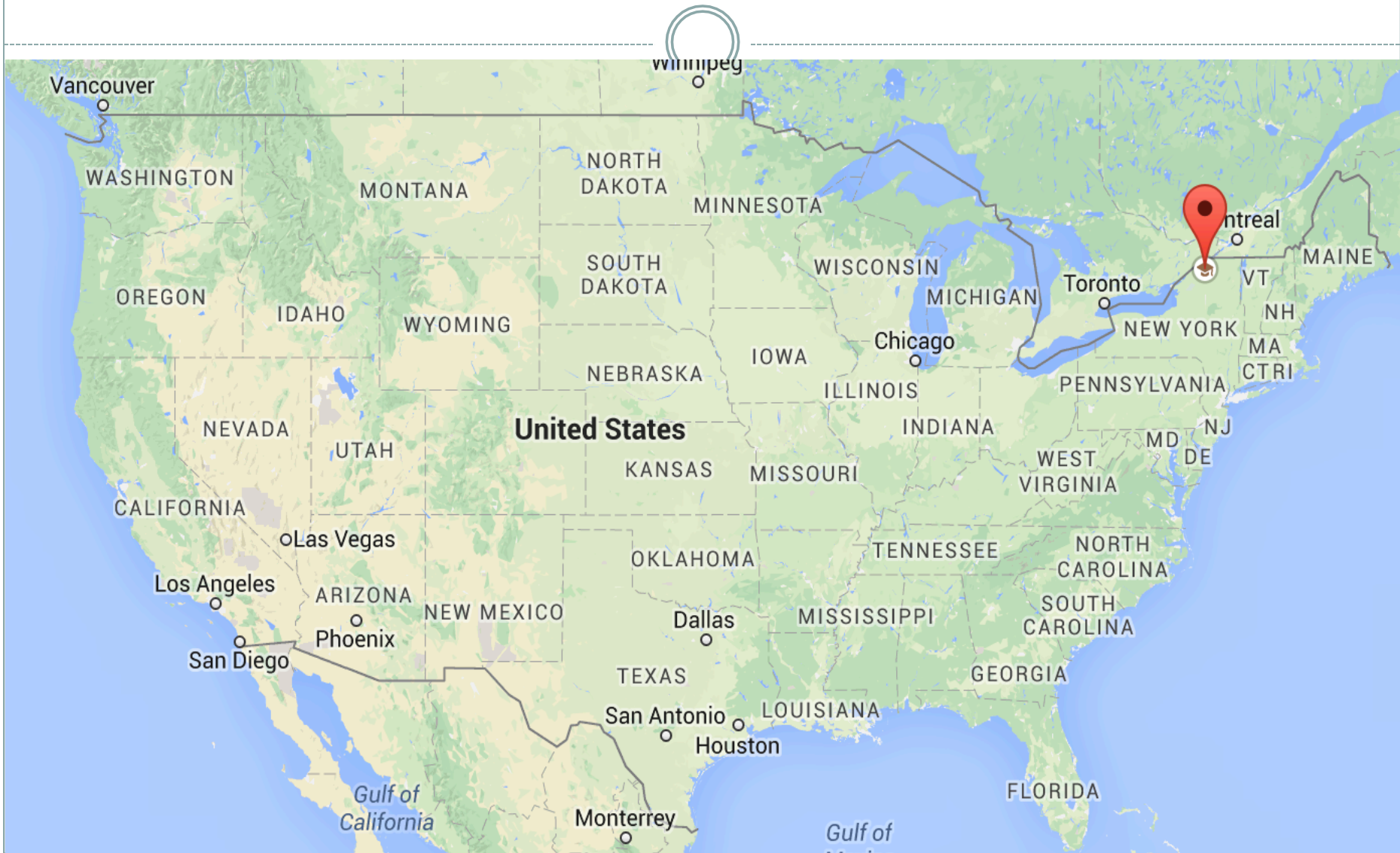
GENI At Clarkson University



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Where we are?



Classes



- **CS654(Current Issues of Computer Networks)**
 - Graduate Research Oriented
 - 6 students (2 distance learning students)
 - Spring 2014
 - Take-home Assignments
 - TA attended Train-the-TA webinar

- **CS455/555, EE407/507(Computer Networks)**
 - Undergraduate + Graduate
 - 43 students (40 UG, 3 GT, 24 EE, 19 CS)
 - Fall 2014
 - In-class labs (Classroom-as-a-Service using GENI wireless resources)
 - Thanks to Fraida Fund and the team at NYU

GENI Exercises



- **CS654(Current Issues of Computer Networks)**
 - First GENI Experiment
 - IPv4 Routing
 - Load balancing router using OpenFlow
 - Content Networking
- **CS455/555, EE407/507(Computer Networks)**
 - Introduction to WITest testbed
 - Adaptive video streaming
 - TCP Congestion Control Variants

Positive Feedback-CS654



- “I’m very thankful to you for introducing us to GENI. It is a wonderful tool to understand every practical aspect of networks. The experiments were very useful in better understanding the concepts.”
- “Provided an hands experience in the domain of current network issues. GENI was an important tool to learn through this process and major homework’s were carried on GENI virtual lab, giving real time experience of the existing infrastructure and its behavior as a whole picture.”

Positive Feedback-CS455/EE407



- “Visualizing all the results was very cool and illustrative of what was going on, the platforms used seem very stable and professional.”
- “I like that the lab introduces the concept of executing a script on a remote server from a local machine.”
- “I enjoyed working through a terminal prompt as I never have done so before in previous labs or other courses.”
- “I liked the real-world usefulness of this lab.”

Concerns



- Take a long time to load VMs and cannot keep resources for enough long time (CS654)
- Strictly follow the steps in the exercises and do not have enough interactions to the system (CS455)
- Disjoint labs due to lacking enough exercises for all pieces of computer networking protocols/algorithms (CS455)
- System failures occur periodically (CS455)

Challenges



- **For students**
 - Get familiar with the GENI env
 - Understand underground prerequisite knowledge(rb, py, openflow)
 - Interact with GENI platform by manipulating existing exercises
 - Keep GENI resources for a relative long time
- **For instructors**
 - Invest large amount of time to prepare and test
 - Coordinate different levels of students
 - Handle unexpected system failures

Suggestions/Comments



- **Simple, concise, flexible and interactive** exercises (e.g. IP routing)
- Consistent lab materials for a whole course
- Persistent Resource Support-ideally semester long, but at least available when needed
- Provide an efficient way to load resources
- More options of assignment examples for each layer, e.g. DNS, OSPF
- System Robustness Support
- More research oriented project examples for graduate students



Thank You and GENI!