BROWN   **Yang, Yuchen <yuchen_yang@brown.edu>**

Yuchen Yang: Your standing in the PhD program

Theophilus Benson <theophilus_benson@brown.edu>   Wed, Jan 9, 2019 at 6:40 PM
To: "Yang, Yuchen" <yuchen_yang@brown.edu>

We can discuss this in our Meeting on Friday.

The goal of the research comp proposal is to answer this question: "What is an appropriate framework for scalable and efficiently analyzing, debugging, recovering micro services from faults and performance problems?"

before you can form your committee and defend — you will need to perform the following:

- Complete the survey — I recommend completing this within the next week (ideally by the end of next week)
- Design a fault injector   — for both real code/simulator (aim to have this part done by mid february — one month)
    - Real Code
    - Simulator
- Evaluate the effectiveness and veracity of the fault-inject using results collected from a testbed with uBPF — essentially conduct a measurement study. (aim to have this by end of february — two weeks)
- Create an DeepLearning environment based on the simulator for exploring and testing different techniques. (end of March — one month)

With these items, you will have the (1) background (from the survey) to determine which class of fault we want to do research on, (2) a tested simulator (from fault-injector and simulator) to perform the research, (3) an initial results that we can detect some class of problems.

You wanted some failure papers for containers — while there are not that many for containers, there are a lot for VMs and servers. http://www.eecg.toronto.edu/~ashvin/courses/ece1724/2009f/index.html
Notes for survey:
* Failure oblivious computing: https://www.usenix.org/legacy/event/osdi04/tech/full_papers/rinard/rinard.pdf
 * RX:https://www.cs.cornell.edu/people/egs/cornellonly/syslunch/fall05/rx.pdf
 * Paxos/Raft/State-machine replication:
 * Gary failures: https://www.usenix.org/conference/osdi18/presentation/huang
 * chaos monkey

Microservices/Application specific
 * Tracing: https://systems.cs.brown.edu/projects/baggage/
 * Seer: tracing + machine learning: https://www.usenix.org/conference/hotcloud18/presentation/gan
 * Provenance-based: https://www.usenix.org/system/files/conference/hotcloud17/hotcloud17-paper-han.pdf
 * Sieve: https://dl.acm.org/citation.cfm?id=3135977

I've attached uBPF to this email.

—Theo

> On Jan 9, 2019, at 3:11 PM, Yang, Yuchen <yuchen_yang@brown.edu> wrote:
>
> Thank you for the info!
>
> Yuchen
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> On Wed, Jan 9, 2019 at 3:10 PM Clarke, Lauren <lauren_clarke@brown.edu> wrote:
>> Sent on behalf of David Laidlaw

Dear Yuchen:

Every year the CS faculty meet to discuss the students in our PhD program. You are in Good standing.
You are reminded that the research comp proposal should be completed by April 21st and you should
have your committee finalized by March 15th.

For more information on your standing and progress, please speak with your advisor.

For information on the standings for the program, please go to http://www.brown.edu/
academics/gradschool/graduate-school-handbook-information-both-programs-and-students#standing

Please feel free to talk with me or your advisor about any concerns that you have.

-David

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