Logistics

- **Time:**
  - 03/19/2018, 12:30 pm - 2:30 pm

- **Place:**
  - Room 1: Oshman 125, [Sign up sheet](#)
  - Room 2: 450 Serra Mall, 300-300, [Sign up sheet](#)

- **Format:**
  - 3.5 minutes (3 minutes talk + 0.5 minute QA)

- **Submission:**
  - The deadline to change your slides or send your taped videos for SCPD students is 03/18/2018 at 5:00 pm.
  - The deadline of the final report is 03/22/2018 at 11:59pm.
Grading

Project Proposal: 1%
Project Milestone: 5%
Final Project Report: 25%
Final Project Presentation: 7%
Caveats

- Please submit your slides on time. We will disable the editing by the deadline.
- Please do not change the order of or modify the slides of any other group.
- Only SCPD students are allowed to tape the video unless explicitly approved by the head TA.
Presentation Contents

● Problem Definition and Motivation
  ○ What is the problem you are trying to solve? How is it related to the course material? What is your goal? What is the challenges in this problem?

● Previous Works (Optional)
  ○ How do previous people solve this problem? What are their limitations?

● Technical Details
  ○ Highlight your main technical contributions. 3 minutes is too little for detailed math.

● Experiments
  ○ Experimental setup. Quantitative results. Qualitative results. Other expected results.

● Conclusion (Optional)
Tips for the Presentation
1. Make a Storyline.
2. Highlight Your Contributions and Efforts.

Your presentation is an advertisement of your project.

People will read your report later for details.
3. A picture is worth a thousand words.

After all, we are doing a computer vision course…

Animated figure is even better.
4. Less is More.

If you are not talk about a figure/text, remove it from your slides.

Only make 3~6 slides.
5. Practice.

Rehearse in front of your partners/friends.

Measure your time.

Record your voice.
Recurrent Autoregressive Networks for Online Multi-Object Tracking

Kuan Fang, Yu Xiang, Xiaocheng Li, Silvio Savarese

Stanford University
Online Multi-Object Tracking

**Goal**: Reliably associate object trajectories with detections in each video frame based on their tracking history.
Challenges

- Handle occlusions and false alarms.
- Train a neural network model using only limited amount of labeled videos.
Internal Memory and External Memory
### Quantitative Results on MOT Benchmarks

**Tracking performance on MOT2015 benchmark.**

<table>
<thead>
<tr>
<th>Method</th>
<th>Mode</th>
<th>MOTA(↑)</th>
<th>MOTP(↑)</th>
<th>IDS(↓)</th>
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<tbody>
<tr>
<td>CNN/TCN</td>
<td>Batch</td>
<td>29.6</td>
<td>71.8</td>
<td>712</td>
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<tr>
<td>MHT_DAM</td>
<td>Batch</td>
<td>32.4</td>
<td>71.8</td>
<td>435</td>
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<td>NOMT</td>
<td>Batch</td>
<td>33.7</td>
<td>71.9</td>
<td>442</td>
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<tr>
<td>SCEA</td>
<td>Online</td>
<td>29.1</td>
<td>71.1</td>
<td>604</td>
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<tr>
<td>MDP</td>
<td>Online</td>
<td>30.3</td>
<td>71.3</td>
<td>680</td>
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<td>AMIR15</td>
<td>Online</td>
<td>37.6</td>
<td>71.7</td>
<td>1.026</td>
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<td><strong>Our Model (RAN)</strong></td>
<td>Online</td>
<td>35.1</td>
<td>70.9</td>
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</tbody>
</table>

**Tracking performance on MOT2016 benchmark.**

<table>
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<th>MOTP(↑)</th>
<th>IDS(↓)</th>
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<td>NLLMPa</td>
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<tr>
<td><strong>Our Model (RAN)</strong></td>
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<td><strong>45.9</strong></td>
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<td>648</td>
</tr>
</tbody>
</table>
Adaptive Autoregressive Weights Estimated by RAN

The estimated parameters of object 8
Conclusions

- A data efficient network architecture using internal and external memories.
- Outperforms previous methods on the MOT benchmarks.