

# **Unmasking Twitter Misinformation Bots with Deep Learning**

Jamison MacFarland  
Nicholas Campagna

# Twitter Misinformation Bots

- **Between 9-15% of Twitter accounts are social bots (~50m accounts)**
- **Simple bots easy to identify**
- **More sophisticated social AI designed to evade detection**

**Varol, Ferrara, Davis, Menczer, Flammini. *Online Human-Bot Interactions: Detection, Estimation, and Characterization*. ICWSM 2017**

# Election Interference

- **Election Day 2016, group of bots tweeted the #WarAgainstDemocrats more than 1700 times**
- **Putin claimed leaks/misinformation due to “free spirited hackers” defending Russia**
- **Bot communities amplify misinformation campaigns, spread conspiracy theories**
- **Hacked or counterfeit accounts used to tweet propaganda at journalists, politicians, influencers**

<https://www.nytimes.com/2017/09/07/us/politics/russia-facebook-twitter-election.html>

# The Approach

- **Use public datasets to train ANN to spot misinformation bots in real-time**
  - Current tech only allows targeted checking
- **Data points:**
  - User metadata (name, age, profile pic, activity)
  - Connections (followers, followed)
    - Networks of similar accounts
  - Content (hashtags, @s, entropy of words used)
  - Timing (between tweets, retweets, mentions)

# Technologies

- **Python computation**

- <https://keras.io/> fast FOSS ANN API
  - Support for both CPU and GPU computation
- <https://www.tensorflow.org/> low level backend

- **Datasets**

- High volumes of quality annotated data
- <https://botometer.iuni.iu.edu/bot-repository/datasets.html>

# Works Cited

- <http://www.emilio.ferrara.name/2016/11/07/twitter-social-bots-and-the-us-presidential-elections/>
- <https://www.sciencedirect.com/science/article/pii/S0020025518306248>
- <https://ieeexplore.ieee.org/abstract/document/8605995>
- <https://www.liebertpub.com/doi/full/10.1089/big.2017.0041>
- [https://www.researchgate.net/profile/Stefan\\_Suetterlin/publication/334139727\\_Team\\_learning\\_in\\_cybersecurity\\_exercises/links/5d1a241e299bf1547c8eeec06/Team-learning-in-cybersecurity-exercises.pdf#page=29](https://www.researchgate.net/profile/Stefan_Suetterlin/publication/334139727_Team_learning_in_cybersecurity_exercises/links/5d1a241e299bf1547c8eeec06/Team-learning-in-cybersecurity-exercises.pdf#page=29)



# **Fight Misinformation**