

# 2016 CEGS N-GRID

Shared-Tasks and Workshop on Challenges in  
Natural Language Processing for Clinical Data

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<https://www.i2b2.org/NLP/RDoCforPsychiatry/>



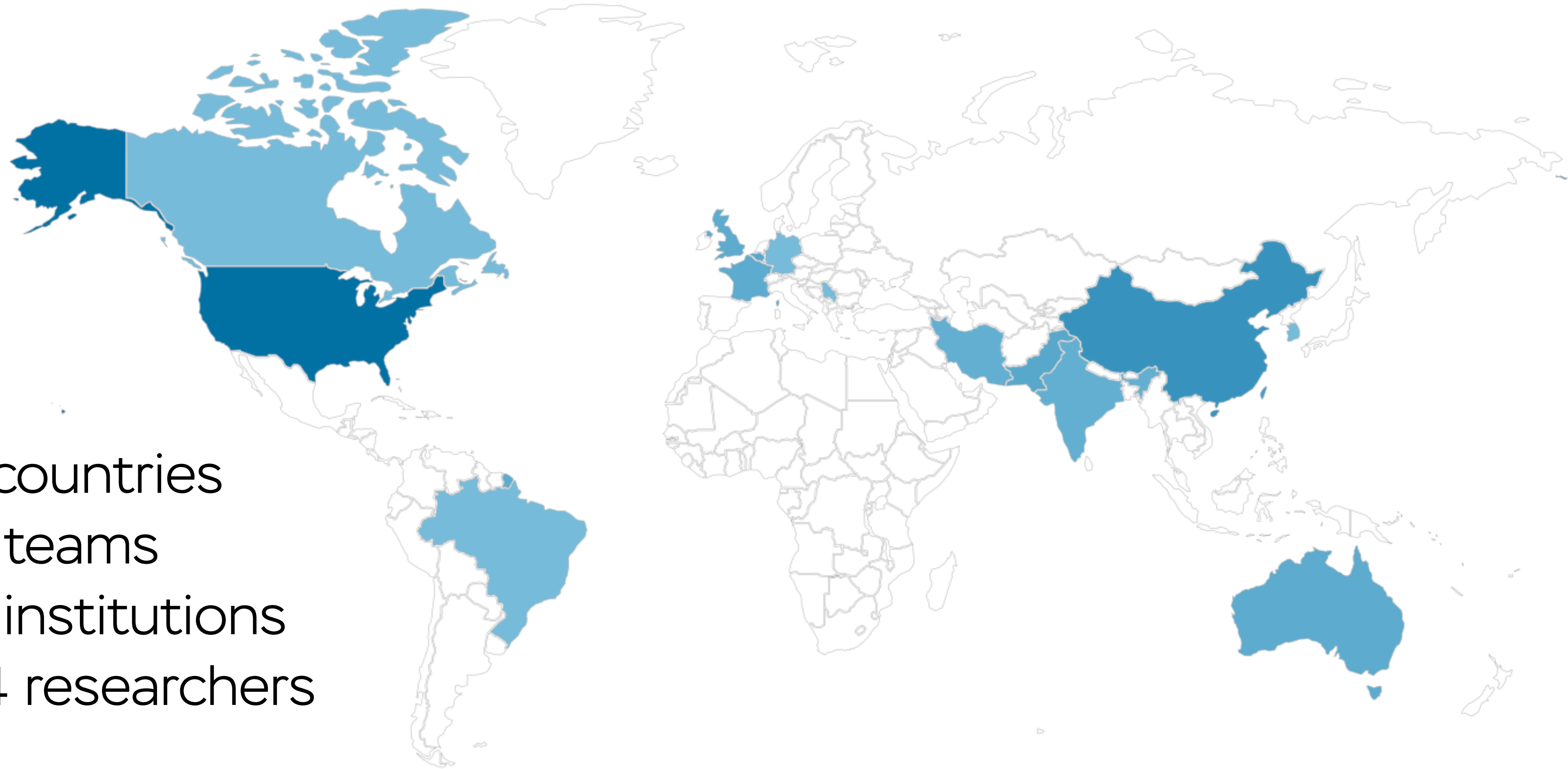
HARVARD  
MEDICAL SCHOOL



PARTNERS  
HEALTHCARE

**N-GRID**

# participation



- 15 countries
- 50 teams
- 65 institutions
- 154 researchers

# CEGS N-GRID 2016: de-identification in 2 flavors

- Track 1.A sight-unseen:
  - running existing de-id systems on the data “as they are”
  - how well do systems generalize to new data?
- Track 1.B regular:
  - design new systems (2 months, 60/40 training/test split)
  - advancing the state of the art in medical rec. de-identification
- Best performing runs:
  - Track 1.A: F1\* **79.56%**
  - Track 1.B: F1\* **91.43%**

Subject: Patient Initial Visit Note -Identifying Information Date of Service:

09/14/2067 CPT Code: 90792: With medical services  
Age:

43 Sex: Female  
Interpreter Used: None needed  
Chief Complaint / HPI Chief Complaint (Patients own words)

Valentina is a 43-year old female with a past psychiatric history significant for an underlying depressive disorder, anxiety disorder, binge eating disorder, no history of prior inpatient psychiatric hospitalizations, no history of prior suicide attempts, no known history of self-injurious behavior, no history of EtOH or illicit-substance use and a past medical history significant for DVT (8-years ago while on OCP) who presents to the EDCRP for continued psychopharmacologic care following her transfer from Dr. Yvonne Ellison's practice. Per Valentina, "I just need to continue these medications...they have been so helpful."

History of Present Illness and Precipitating Events

Valentina describes that she first presented for binge-eating disorder treatment approximately one-year prior to current presentation, when she notes that she was bingeing on a daily basis in the context of a number of stressors/transitions, including the birth of her two children within a year of each other, marriage to her college boyfriend at the age of 39, and ensuing conflicts with her mother as a result of the marriage. She notes that at that time, she binged daily, which steadily led to a marked increase in a 30-pound weight gain within 4 months. She states that she would binge in secret from her husband and two daughters and states that following each binge she felt "awful...ashamed." As a result, she states that her mood started to precipitously decline and states that she ultimately realized that she "could no longer fun from this...I had to seek treatment."

In an effort to seek treatment, she began seeing dietician, Frida Gibbons in Hubert, who she states was "helpful, but not enough." She subsequently purchased a diet book and worked through the exercises in the book and states that that, too, was helpful, but not enough. She ultimately contacted one of the authors of the book and arranged to undergo therapy with her via Skype. She states that that was helpful for approximately 6-months, at which time her therapist suggested that she seek local ED-specific care. As such, she underwent an evaluation with Dr. Deon Yarbrough 6/2066 and was subsequently referred to Dr. Tonya Alston for a 20-week course of CBT-E. Valentina states that her treatment with Dr. Alston was "phenomenal...it was exactly what I needed." She concurrently began seeing Dr. Yvonne Ellison for psychopharmacologic treatment of her underlying depressive/anxiety disorder and BED. She has since responded well to her current regimen of Zoloft, Vyvanse, and Topamax.

# CEGS N-GRID 2016: symptom severity classification

- RDoC: framework for studying mental disorders
  - integrates many levels of information (from genomics to self-report) to understand the basic dimensions of human behavior (from normal to abnormal)
  - 5 domains: **POSITIVE VALENCE\***, NEGATIVE VALENCE, COGNITIVE, SOCIAL PROCESSES, AROUSAL AND REGULATORY SYSTEMS
  - how good systems are at predicting patients' symptom severity, based on initial psychiatric evaluation records?
- Best performing run:
  - INMAEM<sup>+</sup> **86.30%**

Subject: Patient Initial Visit Note -Identifying Information Date of Service:

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Valentina is a 43-year old female with a past psychiatric history significant for an underlying depressive disorder, anxiety disorder, binge eating disorder, no history of prior inpatient psychiatric hospitalizations, no history of prior suicide attempts, no known history of self-harm or suicidal behavior, no history of EtOH or illicit-substance use, and a past medical history significant for DVT (8-years ago while on OCP) who presents to the PCRP for continued psychopharmacologic care following her transfer from Dr. Yvonne Ellison's practice. Per Valentina, "I just need to continue these medications...they have been so helpful."

History of Present Illness and Precipitating Events

Valentina describes that she first presented for binge-eating disorder treatment approximately one-year prior to current presentation, when she notes that she was bingeing on a daily basis in the context of a number of stressors and life events, including the birth of her two children within a year of each other, marriage to her husband at the age of 39, and ensuing conflicts with her mother as a result of the marriage. She notes that at that time, she binged daily, which steadily led to a marked increase in weight gain within 4-months. She states that she would binge in secret from her husband and two daughters and states that following each binge she felt "awful...ashamed." As a result, she states that her mood started to precipitously decline and states that she ultimately realized that she "could no longer fun from this...I had to seek treatment."

In an effort to seek treatment, she began seeing dietitian in Hibel, who she states was "helpful, but not enough." She subsequently read a book and worked through the exercises in the book and states that that, "helped a little." She ultimately contacted one of the authors of the book and had a consultation with her via Skype. She states that that was helpful for approximately 2-weeks. Her therapist suggested that she seek local ED-specific care. As such, she went an evaluation with Dr. Deon Yarbrough 6/2016 and was subsequently referred to Dr. Tonya Alston for a 20-week course of CBT-E. Valentina states that her treatment with Dr. Alston was "phenomenal...it was exactly what I needed." She concurrently began seeing Dr. Yvonne Ellison for psychopharmacologic treatment of her underlying depressive/anxiety disorder and BED. She has since responded well to her current regimen of Zoloft, Vyvanse, and Topamax.

**SEVERE**

**MILD**

**MODERATE**

**NONE**

\* Systems primarily responsible for responses to positive motivational situations or contexts, such as reward seeking, consummatory behavior, and reward/habit learning (alcohol, drink, abuse, repetitive, stereotypy, drug, gamble, count, craving, compulsive)

+ Inverse Normalized Mean Absolute Error, Macro-Averaged