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Identifying Deception of Online Messages in Cyber-Physical and Cognitive Worlds via Internet Psychometrics

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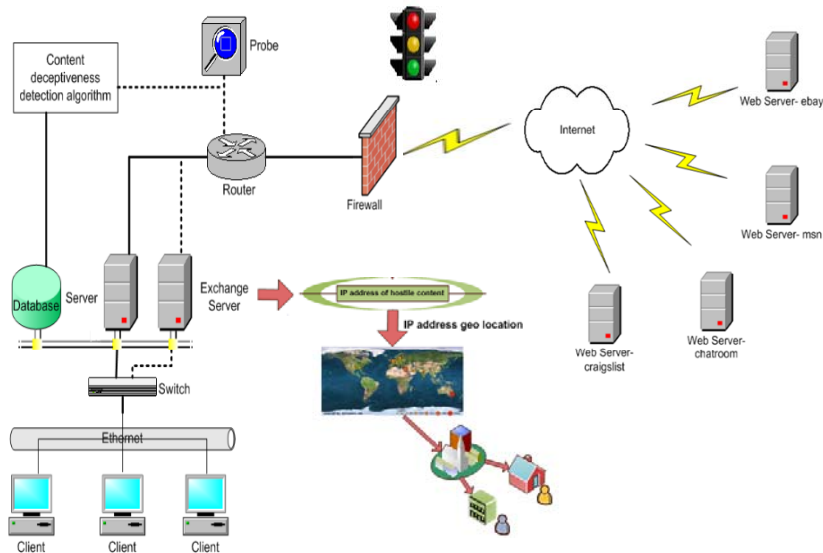
Media Security, Networking and Communications (MSYNC) Lab

Department of ECE
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• System Architecture



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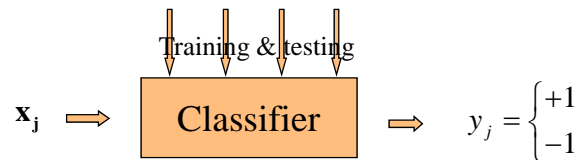
Procedure:

- 1) Collect a suitable corpus of online messages as dataset
- 2) Retrieve significant features in different classes, and represent the messages by feature vectors automatically
- 3) Build a classification model according to statistics or machine learning algorithms
- 4) Track the identity of the author of hostile intent messages.

$$D = \{(\mathbf{x}_1, y_1), (\mathbf{x}_2, y_2), \dots, (\mathbf{x}_n, y_n)\}$$

$$\mathbf{x}_i = [x_{i1}, x_{i2}, \dots, x_{id}]^T, \quad i = 1, 2, \dots, n$$

$$y_i \in \{+1, -1\}$$



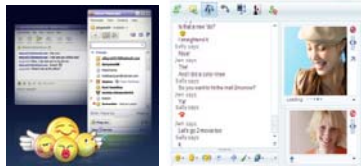
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Research Results

- Identifying the gender of the author with average accuracy 84%.
- Detect similarity of two online messages with average accuracy 75% so far.

Possible Applications



"... Yahoo!, MSN Messenger... indecent assault, robbery ... after contact was made on the internet..."

--- HongKong police April 2008



"Boys' MySpace prank results in sex crime arrest"

---MSNBC March. 8, 2006



"Craigslist Nanny Found Dead in Car Trunk."

---Fox news October 28, 2007

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Advantages of Research

- Automatic real-time online tool
- High accuracy

Next Steps of Research

- Explore better algorithm to improve the accuracy of similarity detection
- Apply adaptive learning method to advance the classifier with the times

Limitations of Research

- Limited efficient dataset