# Sentiment and Politeness Analysis Tools on Developer Discussions Are Unreliable, but so Are People

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## Motivation

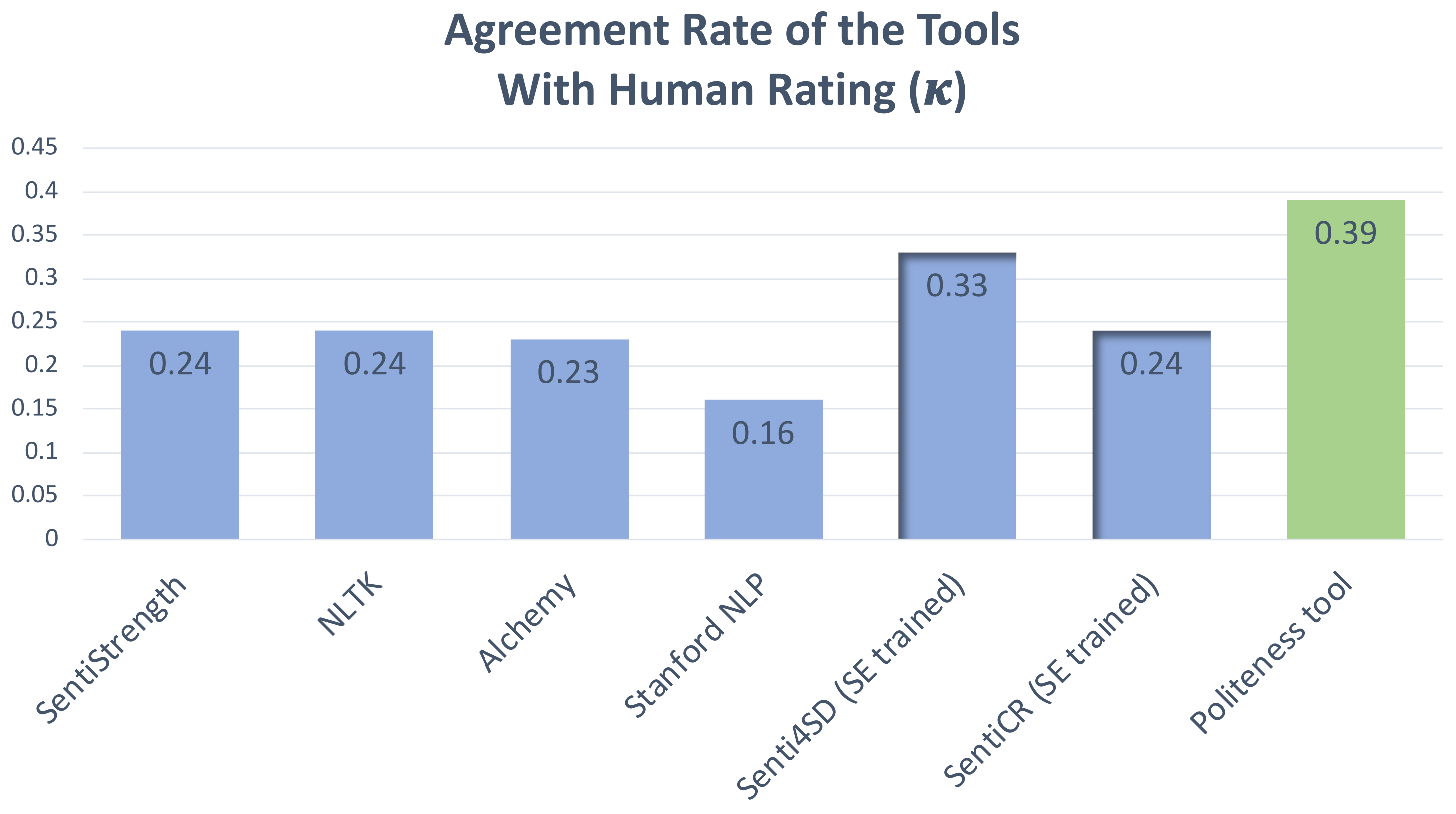
- Emotions affect developers' productivity[1]
- Developers interact over online platforms
- Researchers study emotion in the software engineering domain[2]
- Sentiment and Politeness analysis tools are common approaches[3]
- How reliable are these tools?
- How reliable are the study?

## Annotation Scheme

- Prior studies use different or no annotation schemes
- We use a simple sentiment annotation scheme (positive, neutral, negative) developed by Mohammad[4]
- We developed a scheme[5] on how to rate politeness (polite, neutral, impolite) in textual conversations
- Based on Brown & Levinson's Politeness and Culpeper's Impoliteness theory

## Results: Tools are Unreliable!

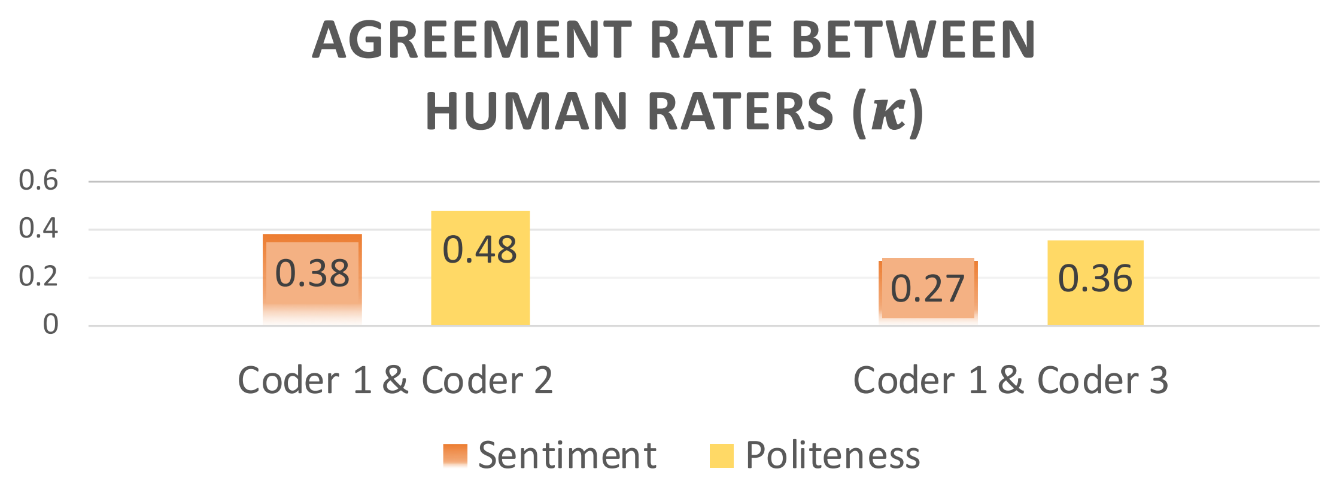
- 589 comments from GitHub
- 6 sentiment tools
- 1 politeness tool
- Tools compared against human rating
- Cohen's kappa to measure tools' agreement with humans



- All tools but one have fair agreement (0.2-0.4)
- "Not Reliable" as per the community standard
- Tools have varying precision and recall over different classes

## Results: Even Humans are Unreliable!

- Each comment rated individually by 2 coders
- Coders had fair and moderate agreements
- Unreliable consistency



- Disputed ratings resolved through discussion
- Need domain specific standardized annotation scheme for consistency

## Reference

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Developer Liberation Front

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