Pre-proposal Oral Presentation

Scalable Clone Detection

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Invent the Future

Outline

- Importance of Clone Detection
- Background of Clone Detection
- Our proposed solution

Importance of Clone Detection

- Code Clone
  - In coding process
    - Common
    - You & Me

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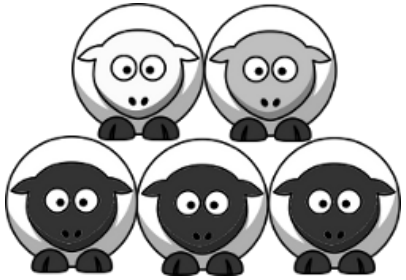

Scalable Clone Detection

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  - Type 4
    - Perform the same computation but are implemented in different ways

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- Token-based method performs well in
  - Clone type detection (Type 1, 2 ,3)
  - Time cost

Our proposed solution

- Goal
  - Develop and implement a scalable clone detection based on tokens
  - Detect Type 1, 2, 3 code clone
- Difficulty
  - Many researchers have done similar job before
- Breakthrough
  - New and aggressive method
- Premise
  - Developers would not make dramatic changes in code clone process except for some modifications such as types, identifiers and statements

Our proposed solution

- Method
  - Design and improve a classification statistical method to calculate the similarity between code fragments
- Fragment A and B
  - Use a parser to catch all the tokens
  - Categorize key tokens into types, variables, identifiers and even operators if needed
  - Accumulate the occurrences of each key token
  - Transform the fragment into a list of key token and frequency
  - Calculate the similarity between two lists
  - Set a threshold to the final output

Our proposed solution

- To be discussed
  - Key token selection
  - Variable comparison (e.g. changes to the token order)
  - Weights in taxonomy (e.g. type > identifier > operator ?)
  - Similarity algorithm
- To be expected
  - Time Cost
    - Classification statistical method
    - No complex lookup or comparison
  - Precision & Recall
    - ? ? ?

Thank you !