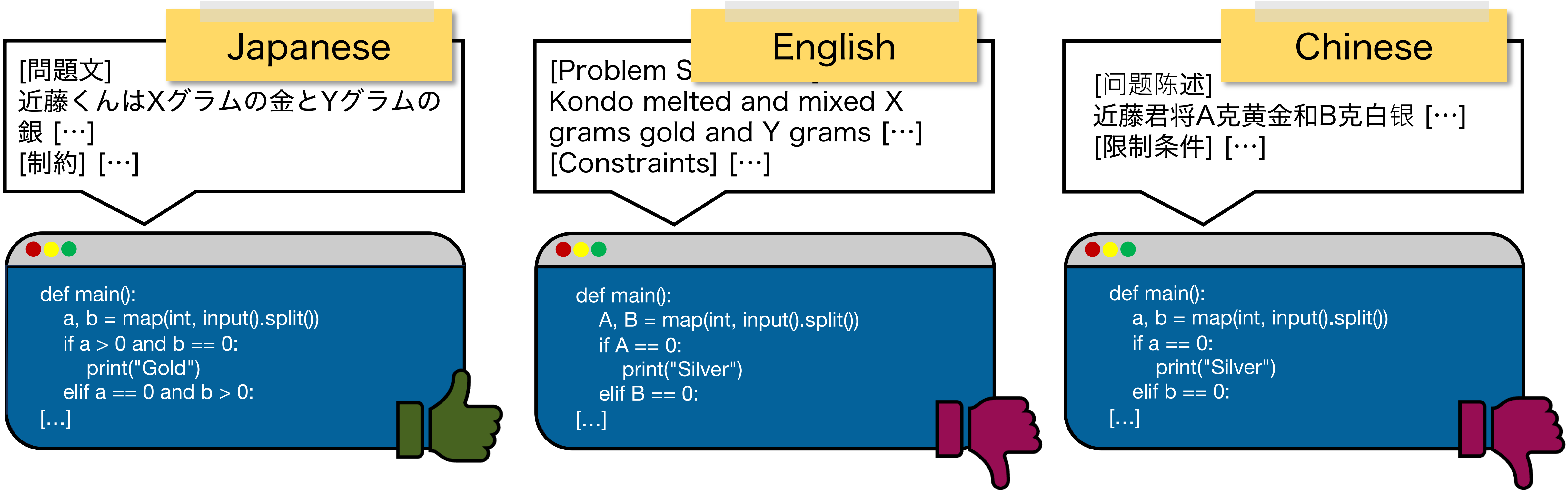

[問題文]
近藤くんはXグラムの金とYグラムの銀 [⋯]
[制約] [⋯]

```
def main():
    a, b = map(int, input().split())
    if a > 0 and b == 0:
        print("Gold")
    elif a == 0 and b > 0:
[…]
```

[Problem S
Kondo melted and mixed X grams gold and Y grams [⋯]
[Constraints] [⋯]

```
def main():
    A, B = map(int, input().split())
    if A == 0:
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[…]
```

[问题陈述]
近藤君将A克黄金和B克白银 [⋯]
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Exploring the Effect of Multiple Natural Languages on Code Suggestion Using GitHub Copilot

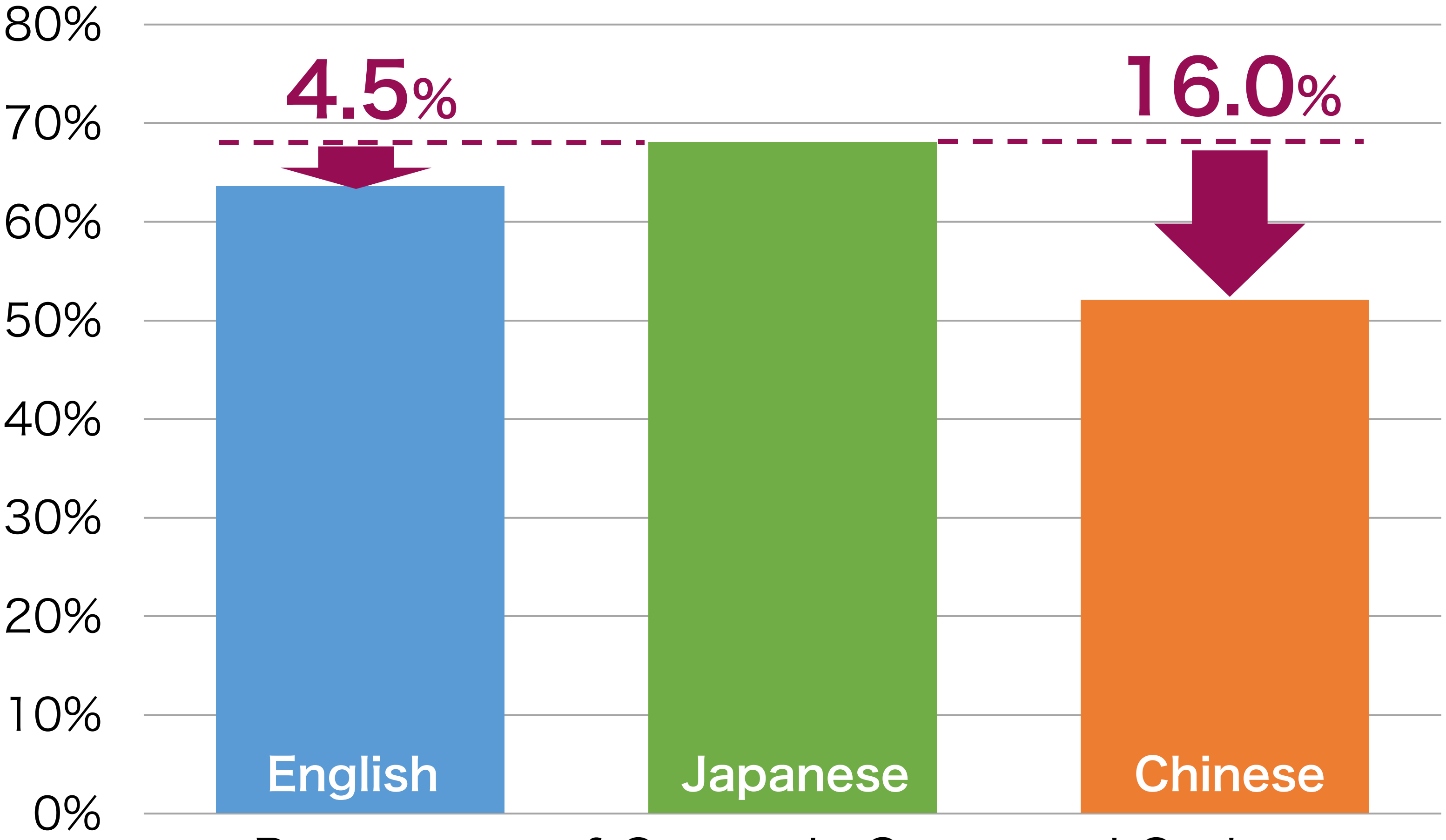
◎Kei Koyanagi, Dong Wang, Kotaro Noguchi, Masanari Kondo
Alexander Serebrenik, Yasutaka Kamei, Naoyasu Ubayashi

九州大学 KYUSHU UNIVERSITY

TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY

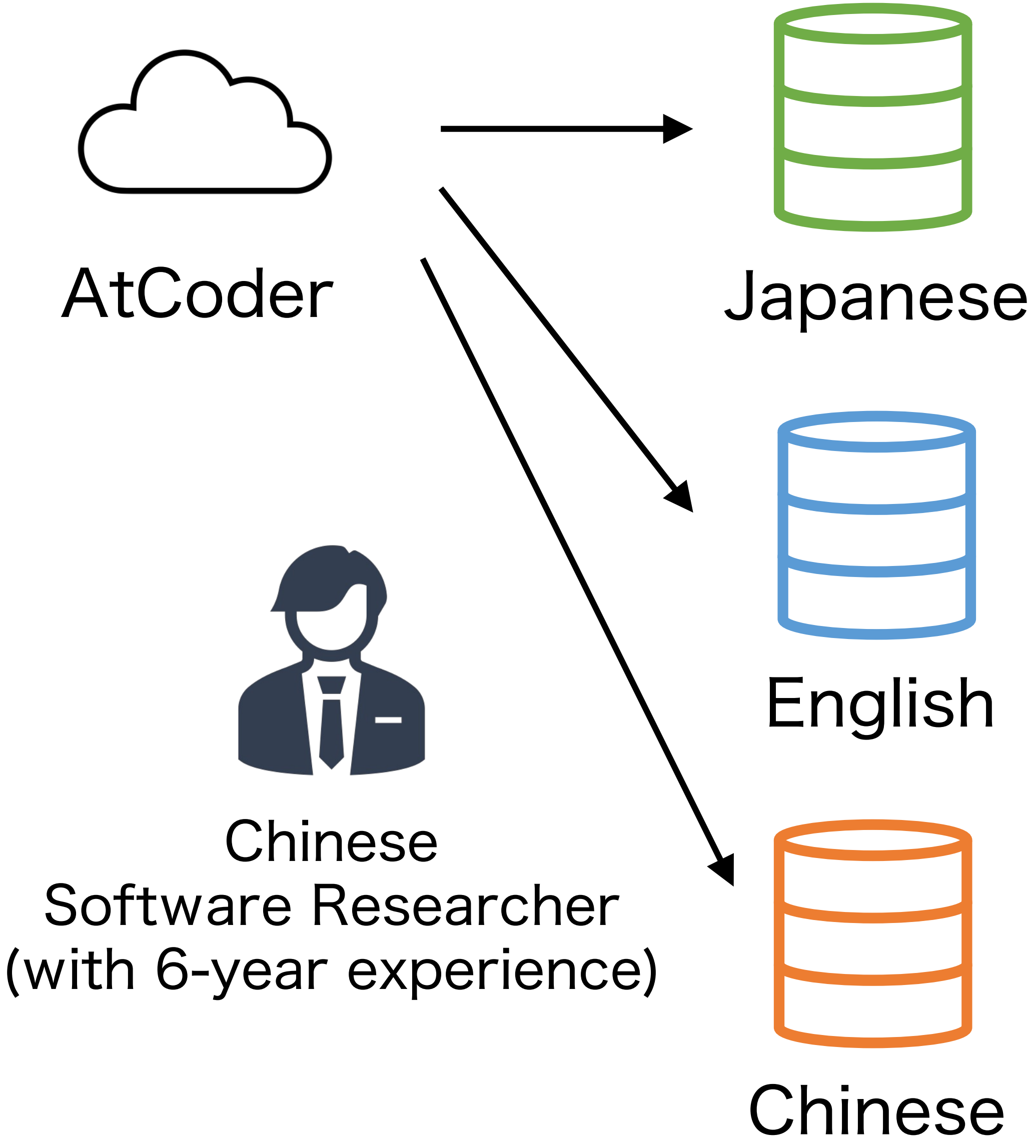
Message!

Chinese speakers may be at a disadvantage compared to English or Japanese speakers



Percentage of Correctly Generated Code
in a Programming Contest

Experiment



AtCoder

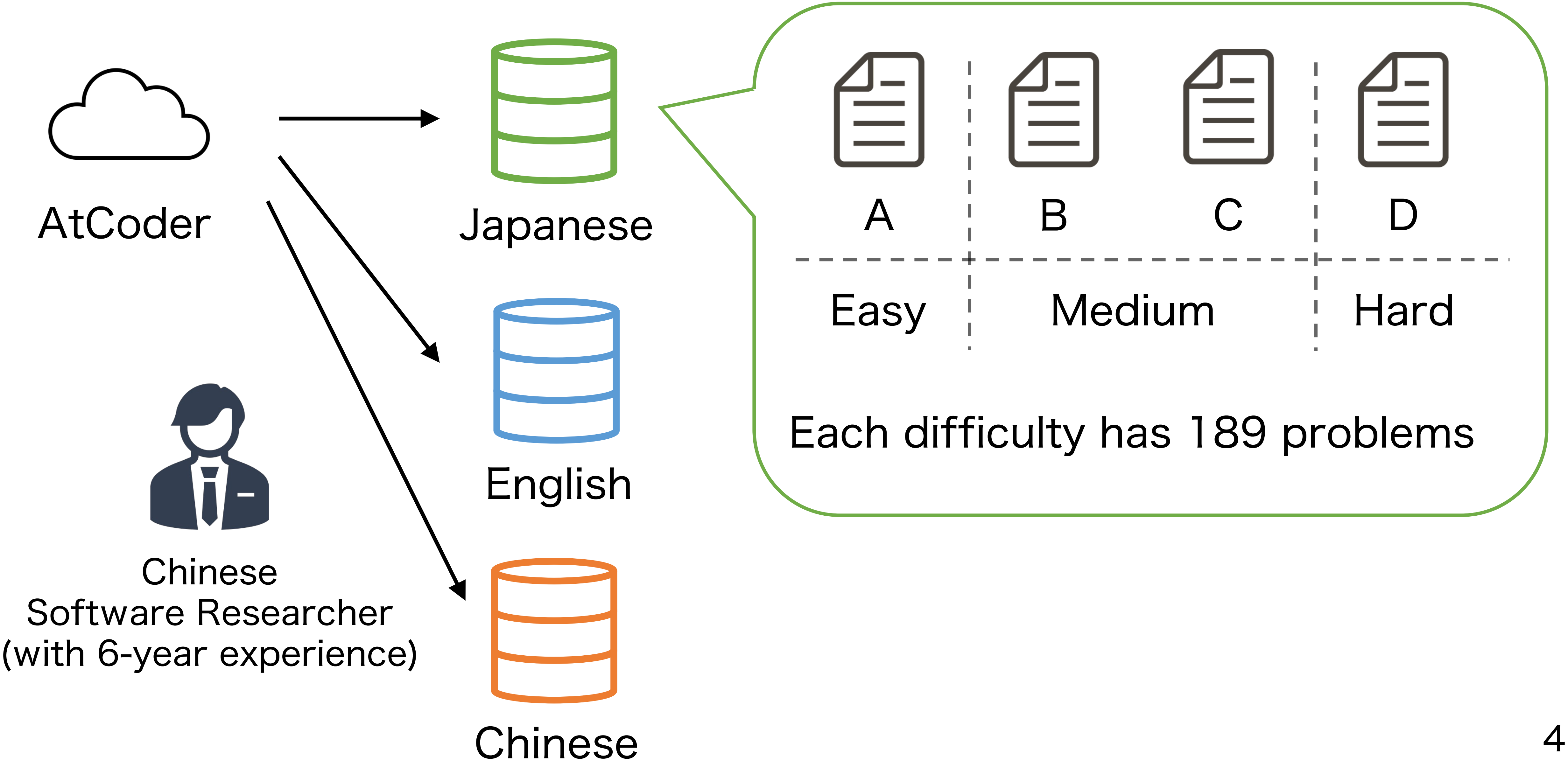
Japanese

English

Chinese

Chinese
Software Researcher
(with 6-year experience)

Experiment



AtCoder

Japanese

English

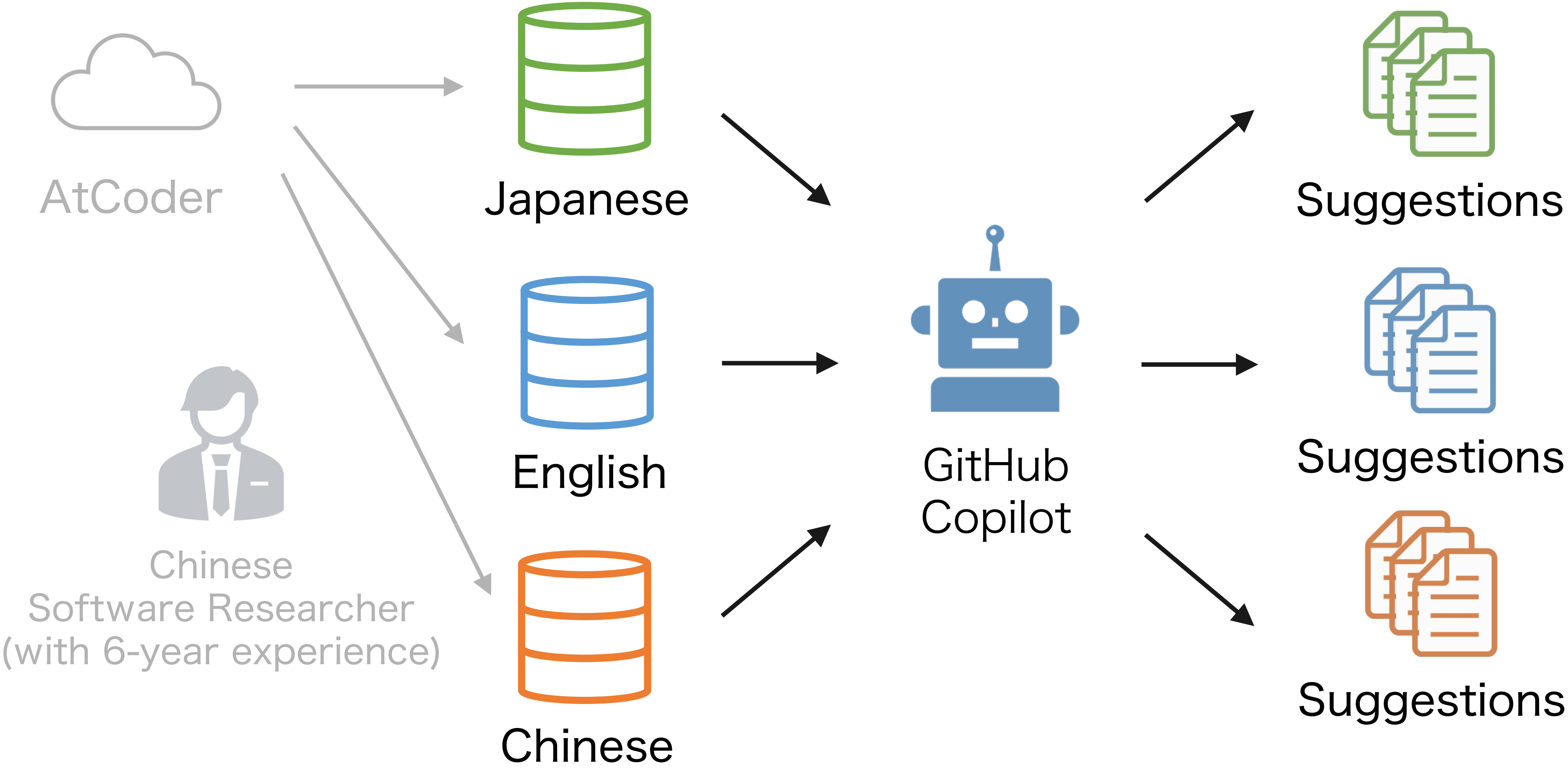
Chinese

Chinese
Software Researcher
(with 6-year experience)

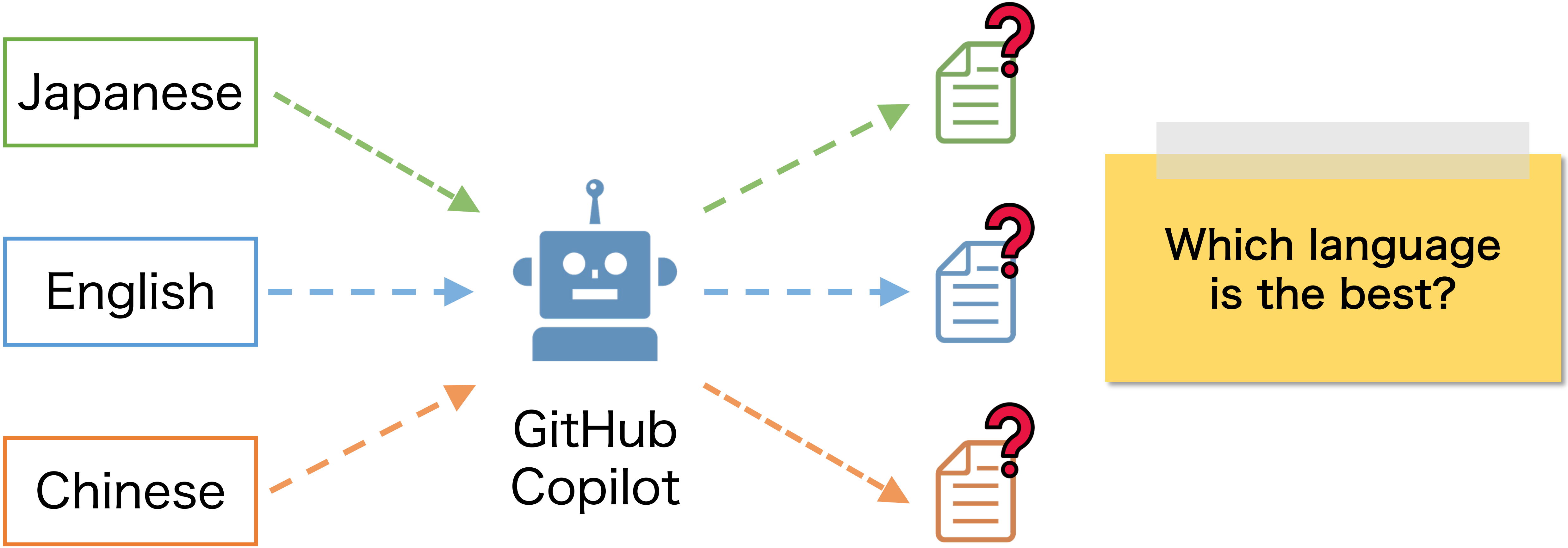
A	B	C	D
Easy	Medium		Hard

Each difficulty has 189 problems

Experiment


AtCoder
Chinese
Software Researcher
(with 6-year experience)
Japanese
English
Chinese
GitHub
Copilot
Suggestions
Suggestions
Suggestions

Goal: Understand how language differences affect GitHub Copilot performance



Japanese

English

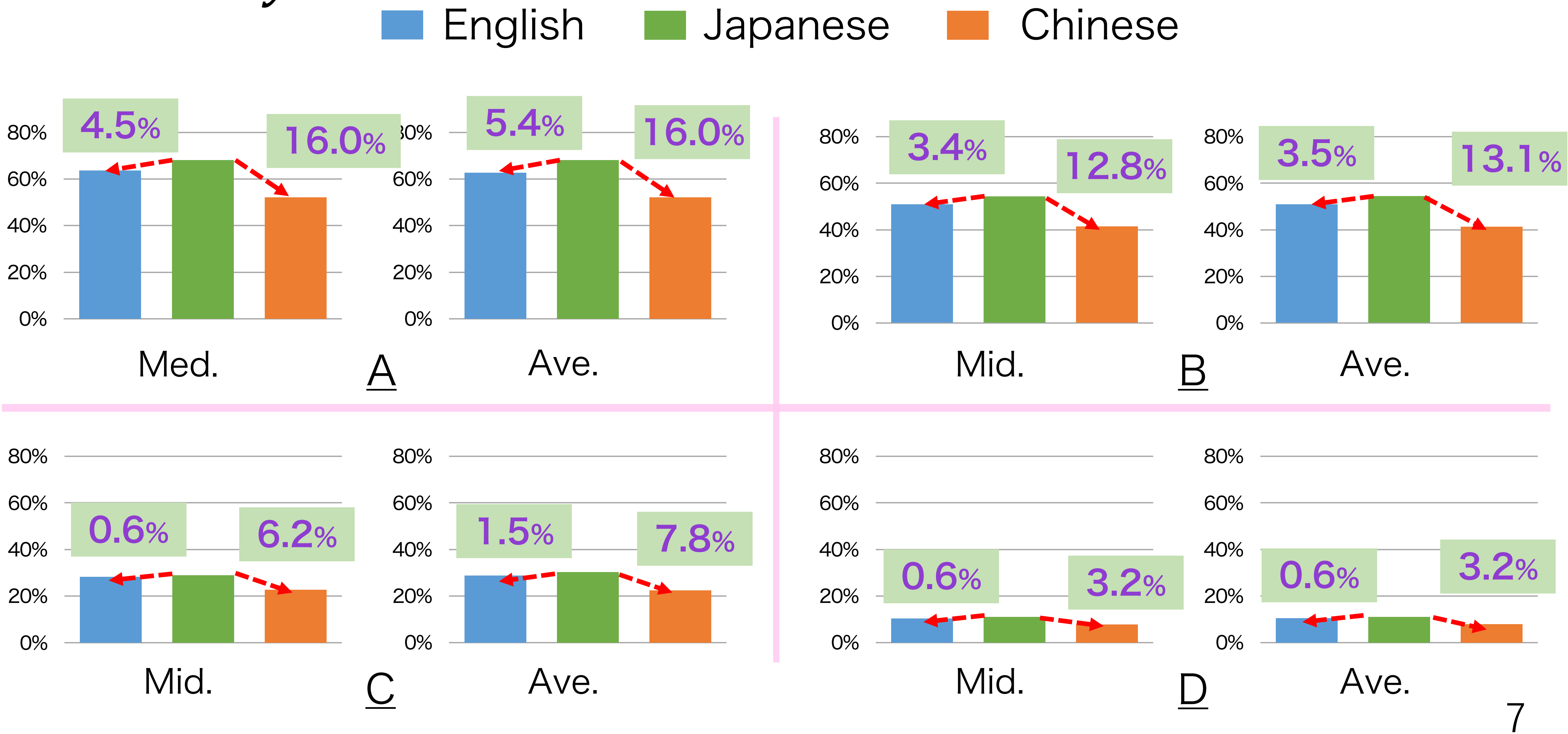
Chinese

GitHub Copilot

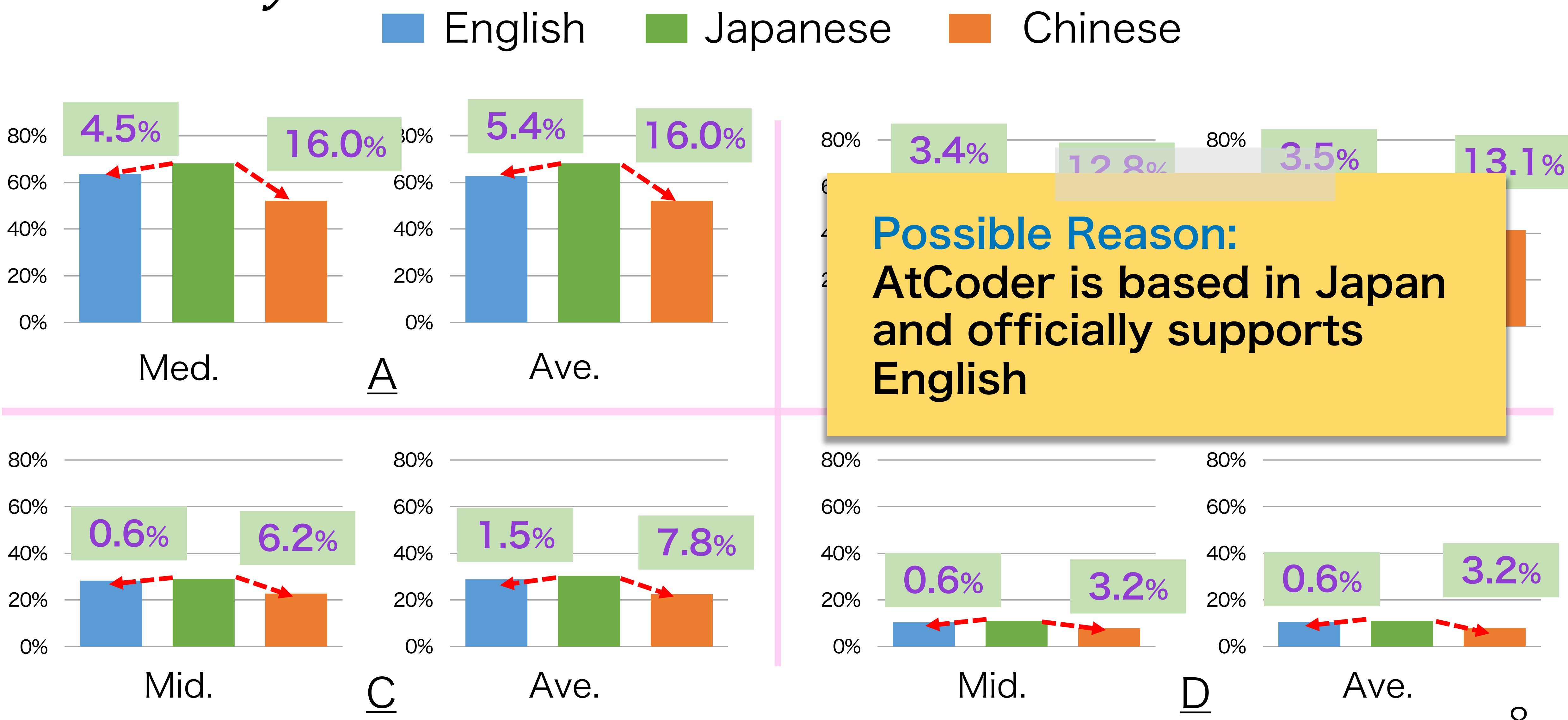
Which language is the best?

Results: Japanese recorded the highest

Accuracy

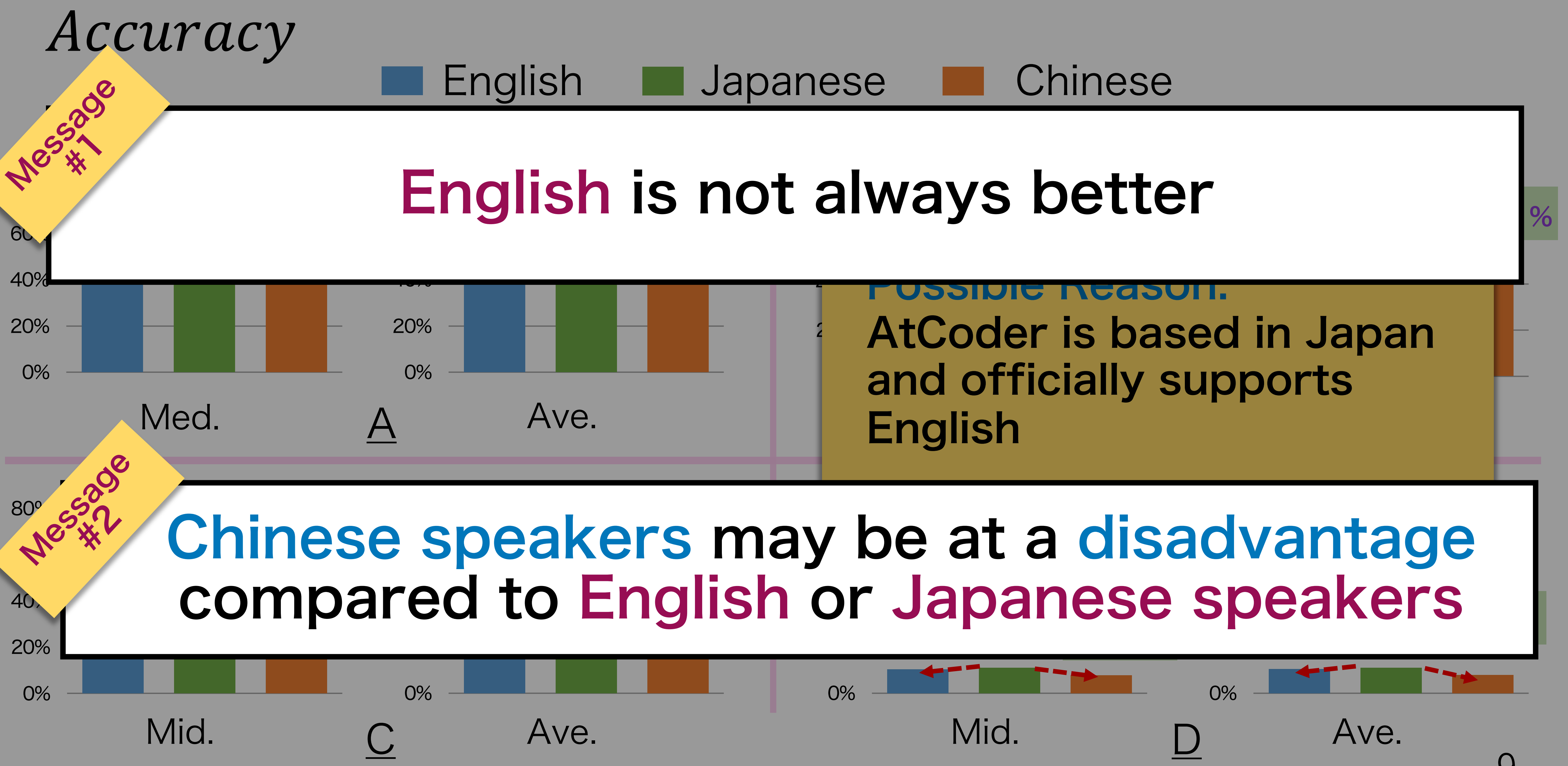


Results: Japanese recorded the highest



Possible Reason:
AtCoder is based in Japan and officially supports English

Results: Japanese recorded the highest



Message #1

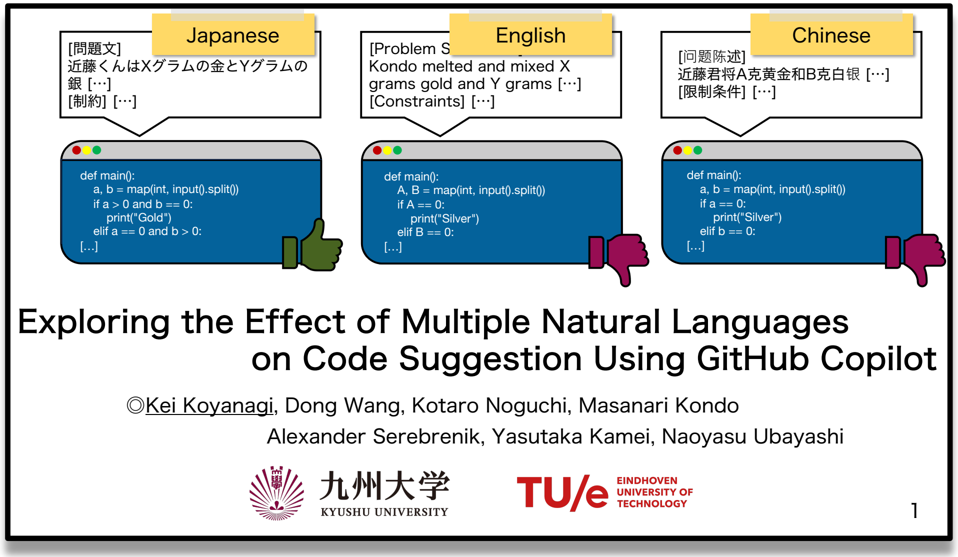
English is not always better

Possible Reason:
AtCoder is based in Japan and officially supports English

Message #2

Chinese speakers may be at a disadvantage compared to English or Japanese speakers

Summary: The capability varies across natural languages.



Japanese

[問題文]
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[制約] […]

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English

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Chinese

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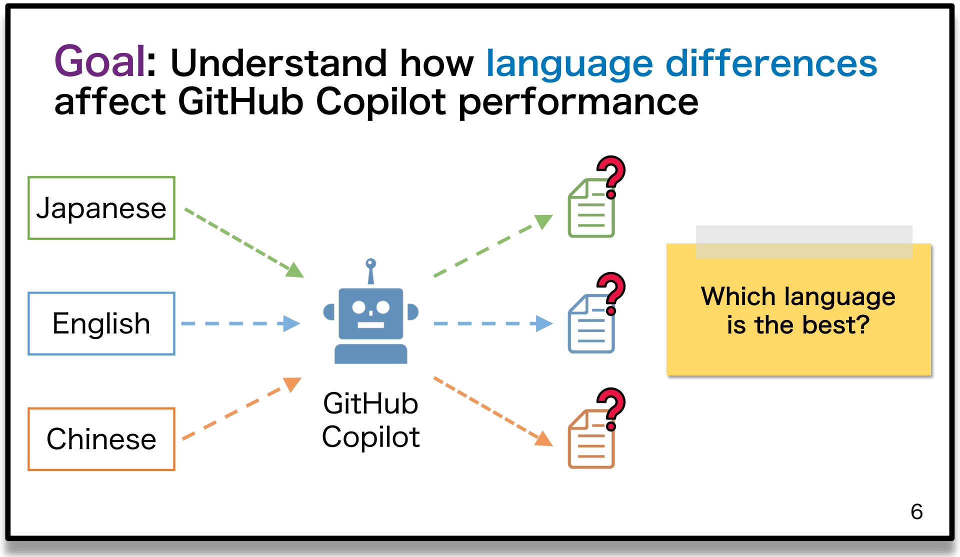
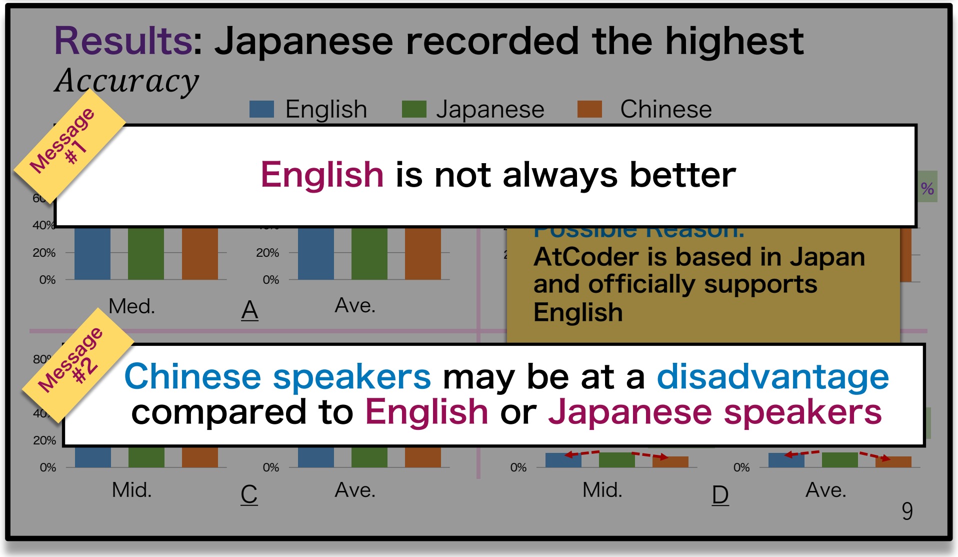
1



Goal: Understand how language differences affect GitHub Copilot performance

6



Results: Japanese recorded the highest

Accuracy

Message #1

English is not always better

Possible Reason:
AtCoder is based in Japan and officially supports English

Message #2

Chinese speakers may be at a disadvantage compared to English or Japanese speakers

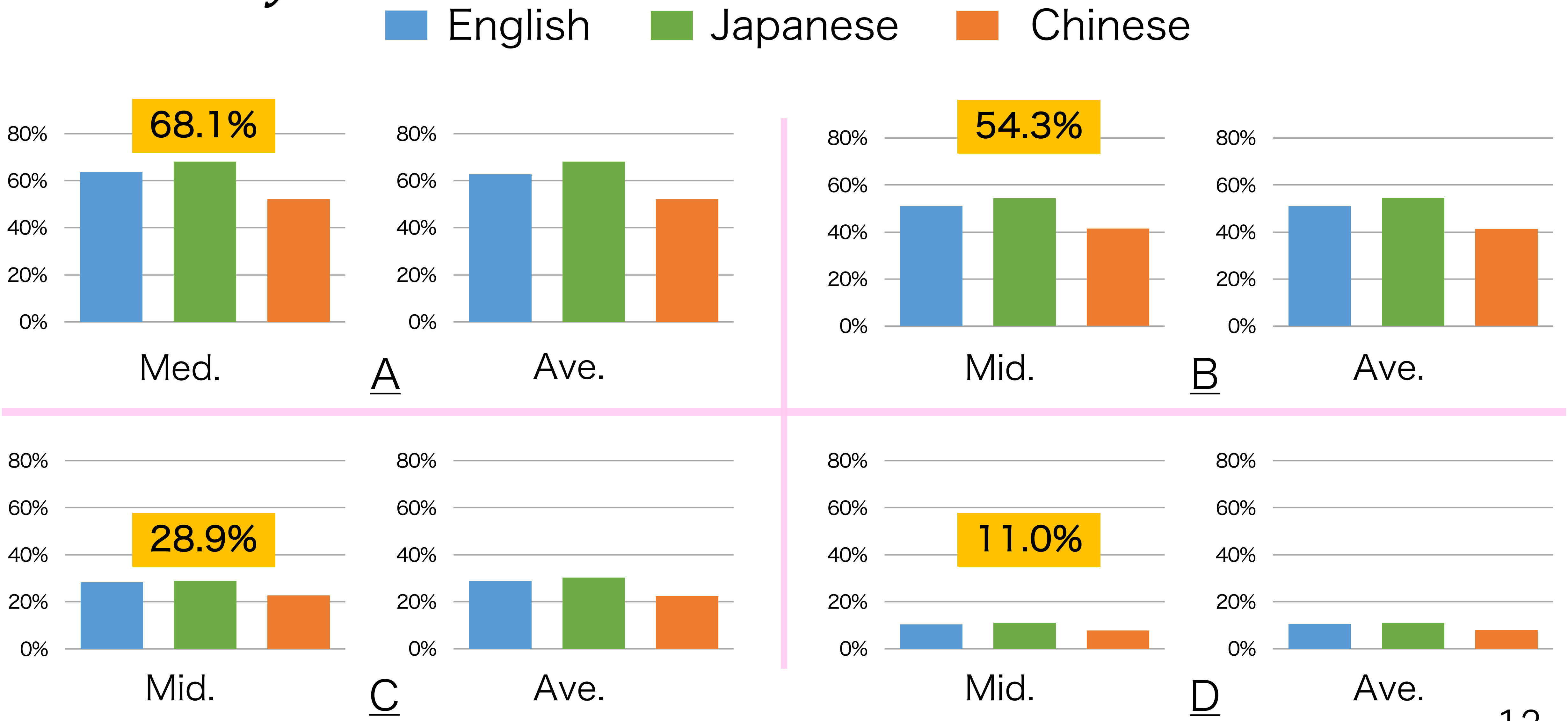
9

Contact:

Email: kondo@ait.kyushu-u.ac.jp
Twitter: @masanari_kondo

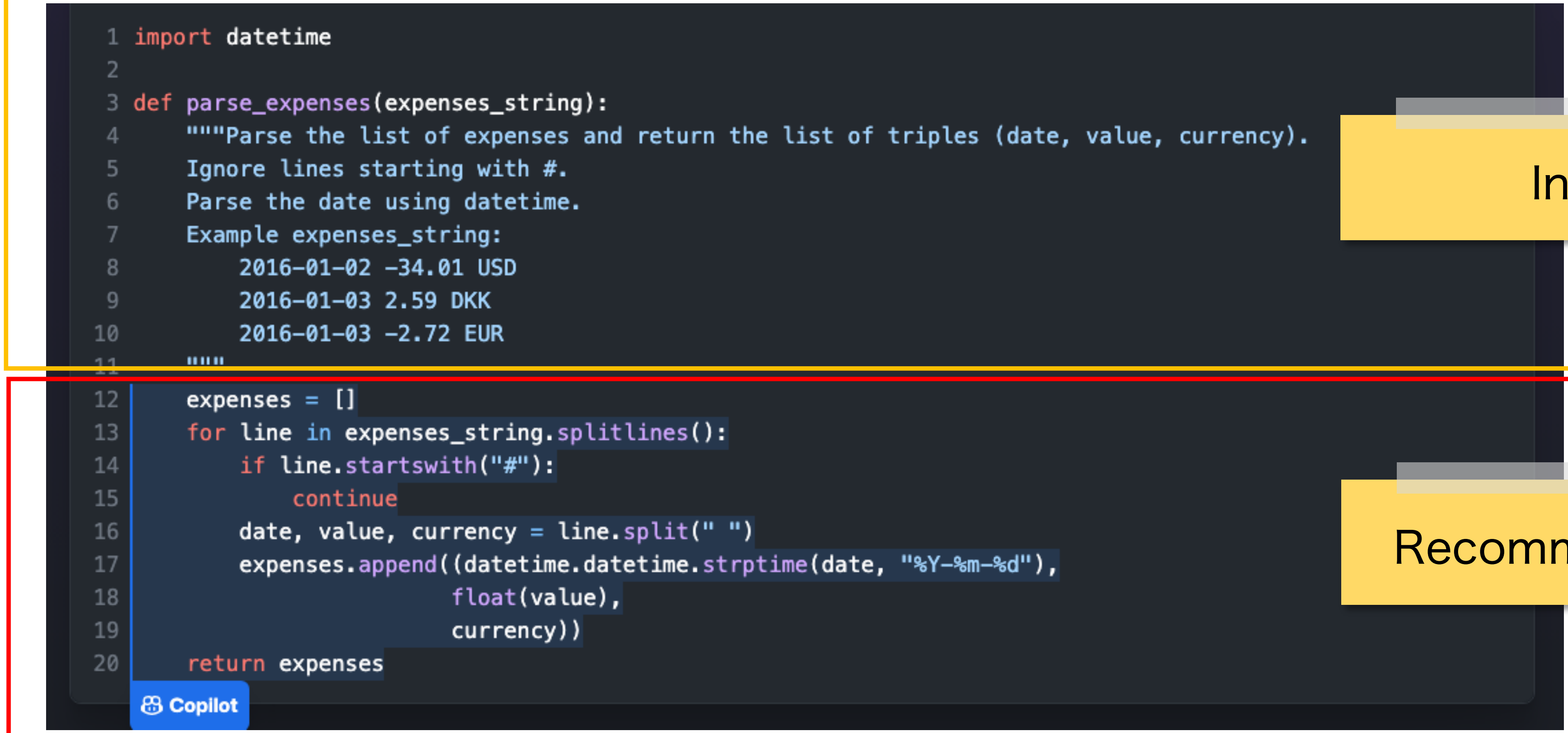
Results: Japanese recorded the highest

$Accuracy$



Background: Development using AI

GitHub Copilot (Coding Support)



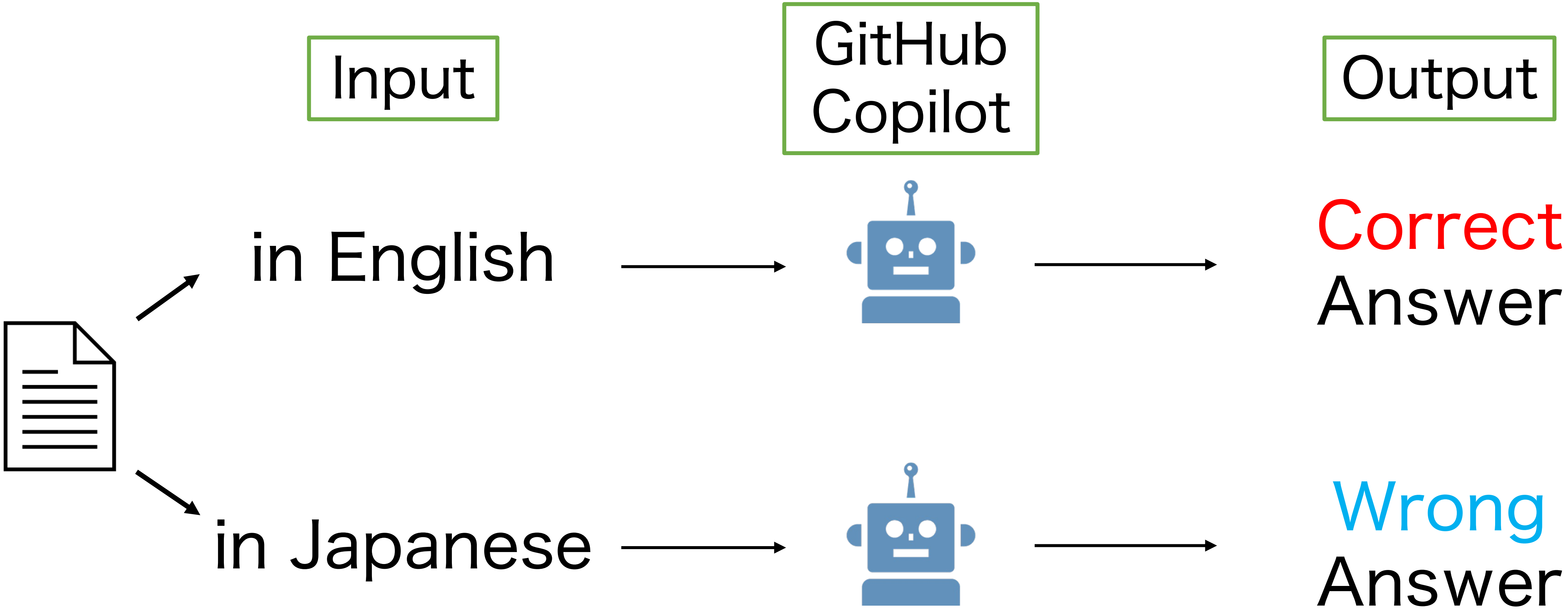
```python
import datetime

def parse_expenses(expenses_string):
    """Parse the list of expenses and return the list of triples (date, value, currency).
    Ignore lines starting with #.
    Parse the date using datetime.
    Example expenses_string:
        2016-01-02 -34.01 USD
        2016-01-03 2.59 DKK
        2016-01-03 -2.72 EUR
    """
    expenses = []
    for line in expenses_string.splitlines():
        if line.startswith("#"):
            continue
        date, value, currency = line.split(" ")
        expenses.append((datetime.datetime.strptime(date, "%Y-%m-%d"),
                         float(value),
                         currency))
    return expenses
```

Input

Recommendation

Background: The effect of input language



Input

GitHub Copilot

Output

in English

Correct Answer

in Japanese

Wrong Answer

We should give appropriate input to use AI efficiently.