2020年度
大学院工学研究科【情報システム工学専攻】博士前期課程
一般選抜試験（第Ⅰ期）問題

英　　語

開始時刻　午前9時30分
終了時刻　午前10時15分

【注意事項】

1．答案用紙には受験番号，氏名を必ず記入してください。
2．配布された答案用紙は試験が終了したら，必ず提出してください。
（問題用紙は提出しなくてよい）。

創価大学大学院 工学研究科 情報システム工学専攻
2020年度 一般入学試験第1期 英語筆記試験問題
以下の15問すべての問いについて、解答用紙に答えを記入してください。

1 次の英文を読み、［問1］～［問10］に答えよ。

(This article appears in IEEE Spectrum in 2018.)

A hallmark of bustling city life is trying to get from one location to another as quickly as possible. But just one isolated event in the urban jungle can create a cascade of redirected traffic and unpredictable congestion—often meaning that taxis are hardest to come by when you want one the most. A new model that estimates traffic flow during unexpected events—in the aftermath of a car accident or natural disaster, for example—provides a new glimmer of hope (1) for commuters and transportation companies alike.

Luis Moreira-Matias is a researcher {_____} (2) to help predict traffic patterns. While working at NEC Laboratories Europe, his team developed and tested a new multivariate model called BRIGHT (3) that aims to capture the complex chain reactions that alter traffic flow under different scenarios. Their focus was on a phenomenon broadly called conceptual drift; it's notoriously difficult to model. Their work is highlighted in a study published on 5 December in IEEE Transactions on Knowledge and Data Engineering.

BRIGHT was developed and tested using a staggering (4) amount of real-time GPS data from three major cities: Porto, Portugal; Stockholm, Sweden; and Shanghai, China. In total, the data represent a whopping 18.5 million trips recorded over the course of three years.

The data reveal patterns of traffic at different times of day, but also fundamental differences in traffic behavior observable in each of the three cities (5). Importantly, BRIGHT was particularly effective at predicting the conceptual drift of traffic compared with existing models.

The tool doesn't rely on just a single predictive model, but three. It's trained to recognize patterns that reflect certain scenarios and choose the most appropriate model to estimate traffic flow based on the observed pattern.

As an analogy (6), Moreira-Matias compares it to a president who is seeking advice from his or her cabinet members, each with their own area of expertise. Before making a decision, the president needs to consider whose advice to take into { (7) } — and whose to ignore as well.

"Instead of trying to create one single model that is able to decide accurately { (8) } every situation, BRIGHT learns multiple and diverse ones, each one with a distinct expertise," Moreira-Matias explains. What's more, he says, "BRIGHT is able to learn, at a meta-level, which are the models that are more reliable and adequate to make a decision in the present context."

An analysis by the team using Porto as a case study suggests that taxi companies could boost their operational revenue by 4 percent by disseminating the BRIGHT traffic forecasts to 50 percent of its drivers. Along with boosting the ability of passengers and drivers to connect, a tool such as BRIGHT could help make taxi services more environmentally efficient (9) by reducing unnecessary emissions.

［問１］下線(1)は「かすかな希望の光」という意味であるが、具体的にはどのような問題点を解決するものか答えなさい。

［問２］下線(2)の{　　}内に適切な文章が入るように、次の語句を並べ替え文章を完成させなさい。

{ AI systems / 10 years / developing / his / about / life / who / to / has / of / dedicated / spent }

［問３］下線(3)はプロダクト名であるが、何をするために開発されたものか答えなさい。

［問４］下線(4)「staggering」の意味として最も適切なものを選び記号を示しなさい。

(a) neither very good nor very bad
(b) gradually becoming less and less
(c) having an end or a limit
(d) extremely great or surprising

［問５］下線(5)に関連して、下記３つの国の首都を英語で答えなさい。

United States of America,
United Kingdom of Great Britain and Northern Ireland,
People's Republic of China

［問６］下線(6)に関して、何と何が対応して「analogy」となっているのか具体的に答えなさい。

［問７］下線(7)の{　　}内に入るのに最も適切な単語を次の中から選びなさい。

(a) number　(b) amount　(c) account　(d) down

［問８］下線(8)の{　　}内に入る適切な前置詞を答えなさい。

［問９］何故、下線(9)のような結果に至るのかを 150 字以上の文章で答えなさい。

［問１０］この記事の内容から「BRIGHT」がどのような特徴を備えているかを 150 字以上の文章で答えなさい。

2 つぎの［問 11］～［問 15］の日本語文を英語に翻訳しなさい。

［問 11］新しい発案は、内容が良くても、いつも受け入れられるとは限らない。

［問 12］利用者が減るなら、設備を縮小することを考えたほうがいい。

［問 13］直感的な印象だけに頼らず、論理的に考えなさい。

［問 14］この電子回路を設計した大学院生は、その会社に雇われた。

［問 15］理想的な条件下での数理的な解析の結果は、しばしば現実と異なる。