Research Student Assistant Mathematical Analysis for Social Robotics

Social Robots with Embedded Large Language Models

For our *Social Robots with Embedded Large Language Models Releasing Stress among the Hong Kong Population*, we are looking for two interns in statistics who possess strong insight into correlational algorithms (cf. Gini mean difference) and have a solid mathematical background.

✓ **Duration: At least one month (possibility of extension)**
✓ **Compensation: HK$ 80/hr**

Key Responsibilities

In consultation with the PI, the intern's will work on a number of tasks regarding an in-house bespoke-made statistical coefficient:

- Clarify the use of summation and square root notation and explicate the order of operations

- Literature research on competing and similar approaches, investigating strengths and weaknesses

- Determine the upper boundary of the statistic, attempting to find a universal scale

- Investigating the effect of outliers and the use of trimmed means or winsorisation, analysis of how the measure behaves under contaminated data

- Behaviour of the measure in small samples or highly homogeneous data and the interpretation of low, typical, high outcomes (with reference to thresholds of statistical significance)

- The handling of negative values, investigation of the directionality of divergence

- Comparative stability across different distributions, skewed or not (multimodal data simulation is suggested)

- The provision of p-values, confidence intervals, and a formal method for hypothesis testing. If no universal null distribution can be found, empirical data simulation is suggested

- Adaptation of the measure for complex or probabilistic data, such as quantum states

INTERESTED? APPLY NOW

Fill in the form: https://forms.gle/icEQvcnEUteUiw4J7

Email us: sd.earnest.lab@polyu.edu.hk