Investigating the impacts of artificial intelligence technology on technological innovation from a patent perspective

一．成果完成人及所在单位： 杨鑫、李宗泽，经济与管理学院 指导教师：邱一卉

二．成果简介：

Artificial intelligence (AI) technology has been widely applied in various fields in recent years. Nevertheless, no systematic study has yet been conducted on the effects of AI technology on different fields. We conducted this study on the patent dataset, we carried out a statistical analysis on technology fields, which we defined and classified based on international patent classification (IPC) number. Distributions of IPC in different fields were also analysed to determine the trends on AI technological innovation. The research conclusions can provide useful information to investors and enterprises, who are interested in the state of the art concerning AI technology.

三．主要研究内容及创新点：

The patent data analysed in this study included some AI-related patents downloaded from the Derwent Patent Database, a total of about 25,000 AI-related patents were retrieved with relevant AI technological keywords in the title and abstract. This is because there is no IPC yet for AI and we cannot obtain the desired patents directly through the IPC number.

The statistical analysis of the IPC numbers of these patents revealed that AI patent applications mainly concentrate in the fields of Human Necessities, Performing Operations, Transporting, Physics and Electricity (Figure 1). Our goal is to analyse the distribution of AI patents in different fields. Instead, the old version of the ISI-OST-INPI classification that characterized by the increasing correlation among emerging countries in recent years. Therefore, given that international comparison must cover more countries, a new version of the ISI-OST-INPI classification method based on IPC-9 code was developed which further divided the information technology field into several fields.

The results demonstrate that the quantities of AI patents in the fields of Control, IT Methods for Management, Measurement, Telecommunications and Medical Technology are significantly higher than those in other fields. This reveals that AI technology has influenced the technological innovation of these fields significantly. Based on a detailed analysis of some fields, AI technological innovations in Control are mainly focused on G08 signal device and G05 control adjustment. In Measurement, AI technological innovations are focused on G01N, which refers to material testing or analysis based on the chemical or physical properties of materials. In Telecommunications, AI technological innovations refer to the patents of electronic communications techniques. In Medical Technology, AI technological innovations are focused on A61B (technologies for diagnosis, surgery and identification). Future studies may consider conducting an analysis from the perspective of patent quality, as the quantity of patents may not be the best way to measure innovation. Moreover, the definitions and classifications of various fields are a potential research direction as well. Finally, the definitions of fields applied in this study have been proposed several years ago. Thus, they may no longer be suitable for the current classifications of industrial fields.

四．主要研究成果及应用情况

在 EI 期刊发表论文《Investigating the impacts of artificial intelligence technology on technological innovation from a patent perspective》1 篇，现已被检索。

联系人：杨鑫 电 话：18559826921 Email:917998714@qq.com