Big Data Analysis: Historical Insights and China’s Breakthroughs – Case Studies and Future Prospects

Name: （Luca Schdimt）孙春辉 Student : 2022015232

In recent years, the development of big data models more and more rapidly, and everyone have forgotten the role of the most important part of the big data modeling —— the big data analytics. The importance of data analytics determines the basic level of accuracy of big data modeling. And this essay will introduce the role of big data analysis.

This essay is structured into three key sections.it begins with introduce what is the big data analytics and explain why we use big data analytics, followed by a macro history of big data analytics in the world and big data analytics about China, and concludes with the future of big data analysis. Then anecdotes will be interspersed throughout the essay.

What is big data analytics? "Big data analytics describes the process of uncovering trends, patterns, and correlations in large amounts of raw data to help make data-informed decisions. These processes use familiar statistical analysis techniques—like clustering and regression—and apply them to more extensive datasets with the help of newer tools. " This is the answer given by salesforce in tableau. Now we know what big data analytics, and why we use it? "Data is woven into the everyday fabric of our lives. With the rise of mobile, social media, and smart technologies associated with the Internet of Things (IoT), we now transmit more data than ever before—and at a dizzying speed. Thanks to big data analytics,

organizations can now use that information to rapidly improve the way they work, think, and provide value to their customers. With the assistance of tools and applications, big data can help you gain insights, optimize operations, and predict future outcomes. This ability to derive insights to inform better decision making is why big data is important. It's how a retailer might hone their targeted ad campaigns, or how a wholesaler might resolve bottlenecks in the supply chain. It's also how a health care provider might discover new options for clinical care based on patient data trends. Big data analytics enables a more holistic, data-driven approach to decision-making, in turn promoting growth, efficiency, and innovation." This is the answer given by Microsoft.

Most people think that big data analytics should be a technology that has emerged in last few decades, but it's really not. The earliest examples we have od humans storing and analyzing data are the tally sticks, which date back to 18,000 BCE! The Ishango Bone was discovered in 1960 in what is now known as Uganda and is thought to be one of the earliest pieces of evidence of prehistoric data storage. This may differ from the perceptions of most people, but humans did use data analysis technology as early as 18,000 years ago.

Big data in 20th century. The first data-processing machine appeared in 1943 and was developed by the British to decipher Nazi codes during World War II. This device, named Colossus, searched for patterns in intercepted messages at a rate of 5,000 characters per second, reducing the length of time the task took from weeks to merely hours. Then, in 1965 , the United States Government decided to build the first data centre to store over tax returns and sets of fingerprints. The project

was later dropped but is widely accepted as the beginning of the electronic data storage era. The internet age and the dawn of big data is coming, because the World Wide Web and developed HTML is created by Tim Berners-Lee and Robert Cailliau between 1989 and 1990.

The information age —— 21th century. Since the early 2000s,the internet and the Web has offered unique data collections and data analysis opportunities. With the expansion of web traffic and online stores, companies such as Yahoo, Amazon and eBay location data and search logs. This opened a whole new world of possibilities. Focus on China, the Baidu search have the more information compared to before, and "We can deal with hundreds of billions or trillions of data [points]," says Zhang Tong, the head of the Big Data Lab at Baidu, China's largest search engine. Big data technologies are often used alongside other high-tech innovations like cloud computing and artificial intelligence. Though the big data has blossomed only in the last decade, it is already being used in China in many aspects of life. For example, Baidu is using big data to track and project patterns n disease, which can help hospital administrators make vaccines or schedule staff. Tencent, the tech giant that runs China's largest mobile chat network, Wechat and QQ , are using social data to identify the trendsetters among groups of friends, and target marketing spending on those people. Alibaba , China's biggest ecommerce company , is using a wealth of financial information from its Taobao and Alipay programs to figure out which small businesses are worthy of a loan.

In addition to these macro-level advances and changes, what struck us more deeply was the improvement in our daily lives. The traffic prediction is more correct than before with the addition of big data analysis technology. The difference

between the time predicted by the previous map and the real one is huge, and it may be more than ten minutes apart. But now, the traffic signals' time changed accurate to seconds. This applied to autonomous driving for realize the optimal path planning that will reduce traffic congression and provide us with the best options to quickly reach our destination. Other sides, we can use this to visualize the tender of commodities' price and help us to decide when and on which platform to buy.

In the future , big data will also be useful and disruptive for companies outside of the tech sector. Banks can use big data to analyze consumer creditworthiness, while insurance companies can use it to find more secure investments for their funds. The government can use it to identify the shortcomings of urban planning. Automotive manufacturers can use big data to manage supply chains, ensuring they produce the right number of components and ship cars to the right markets. In addition to above, there are many potential uses for big data in government. For example , Beijing is working with IBM to model and manage the city's smog problem. For historical aspects, feature extraction can be performed with existing samples and to find some possibility about past things. But supervision and prevention of big data and data privacy is a major issue that needs to be solved in the future.

1. References

[1] 维基百科"大数据"词条[EB/OL]. https://zh.wikipedia. org/wiki/大数据.2015/10/23，2015-11-17.

[2] 百度百科"大数据"词条[EB/OL]. http://baike.baidu.com/subview/6954399/13647476.htm，2015-11-17.

[3] 郭为.一部精彩纷呈的时代杰作（推荐序二）[A].涂子沛. 数据之巅：大数据革命，历史、现实与未 来[C].北京：中 信出版社，2014.

[4] 郎格诺瓦，瑟诺博司.史学原论[M].李思纯，译.上海：商 务印书馆，1926.

[5] 傅斯年.历史语言研究所工作之旨趣[A].欧阳哲生.傅斯 年全集：第三卷[C].长沙：湖南教育出版社，2003.

[6] 钱玄同.李大钊《新的! 旧的! 》的附言[A].钱玄同文集：第 2 卷[C].北京：中国人民大学出版社，1999.

[7] 黄一农.两头蛇：明末清初的第一代天主教徒[M].上海： 上海古籍出版社，2006.

[8] 金观涛，刘青峰.观念史研究：中国现代重要政治术语的 形成[M].北京：法律出版社，2009.

[9] 项洁，涂丰恩.导论——什么是数位人文[A].项洁，王 泰 升，等.从保存到创造：开启数位人文研究[C].台北：国立 台湾大学出版中心，2011.

[10] 焦润明.网络史学论纲[J].史学理论研究，2009，（4）.

[11] 周兵.历史学与 新 媒 体：数 字 史 学 刍 议[J].甘肃 社 会 科 学，2013，（5）.

[12] 任思蕴，李纯一.当乾嘉学派遇上互联网[N].文汇报·文 汇学人，2014-10-17.

[13] 项洁，翁稷安.导论——关于数位人文的思考：理论与方 法[A].项洁编，金观涛，等.数位人文研究的新视野：基 础与想象[C].台北：国立台湾大学出版中心，2011.

[14] 傅璇琮.唐诗有了排行榜之后——读唐诗排行榜[A].濡 沫集[C].北京：北京联合出版公司，2013.

[15] 苗贵松，等.中国古典文学数字化进程中的定量研究和 争鸣： 兼论唐戴

叔伦编年系地信息平台建设[EB/OL]. http://www.guoxue.com/?p=14705.2013/09/16，2015 - 11-17.

[16] 彭珊珊. 专访李政道之子李中清：150 年来中国的精英 出身什么家庭[EB/OL].http://www.thepaper.cn/newsDetail_forward_1395229，2015-11-12.

[17] 陈寅恪.陈垣《敦煌劫余录》序[A].金明馆丛稿二编[C]. 北京：三联书店，2001.

[18] 托马斯·库恩.科学革命的结构[M].金吾伦，胡新和，译. 北京：北京大学出版社，2012.

[19] 罗玮，罗教讲.新计算社会学：大数据时代的社会学研究 [J].社会学研究，2015，（3）.

[20] 梁启超.历史统计学[A].梁启超全集（第 7 册）[C].北京：北京出版社，1999.

[21] 胡小伟.钱锺书与电脑时代[A].丁伟志.钱钟书先生百年 诞辰纪念文集[C].北京：三联书店，2010.

[22] 胡小伟.钱钟书与中国古籍数字化[N].人民日报，2011- 01-13.

[23] 罗凤珠.引信息的“术”入文学的“心”——谈情感计算和 语义研究在文史领域的应用[J].文学遗产，2009，（1）.

[24]中国大数据第二届年会：回顾 BIG DATA CHINA [EB/OL]. http://bigdatachina.csis.org/the-big-data-china-2nd-annual-conference-a-recap/.2024,

[25] 马建强.计算历史学：大数据时代的历史研究. [J]. ACADEMIC FORUM 2015 年第十二期.2015 年 12 月 10 日出版.

[26] Big Data Analytics: What It Is, How It Works, Benefits, And Challenges[EB/OL].(2025-4-11).https://www.tableau.com/analytics/what-is-

big-data-analytics,

[27] What is big data analytics?[EB/OL] .(2025-4-11)

https://azure.microsoft.com/en-us/resources/cloud-computing-dictionary/what-is-big-data-analytics,

[28] The history of big data[EB/OL] George Firican (2025-4-12)

https://www.lightsondata.com/the-history-of-big-data/,

[29] Ana Swanson. The Power of Big Data in China[EB/OL](July 28, 2015)

https://english.ckgsb.edu.cn/knowledge/article/the-power-of-big-data-in-china/,

[30] Larry Zhou. The Age of AI: Strategic insights for AI innovation[EB/OL](January 03, 2025) .

https://english.ckgsb.edu.cn/knowledge/article/the-age-of-ai-strategic-insights-for-ai-innovation,