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COGNITIVE SPECIAL    FEBRAURY - 8 - 2019

# Planet AI

## A Roadmap to Alvolution

**WELF WUSTLICH,**
CTO

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## A Roadmap to AIvolution

By Karan

**A**mong the many startups that featured their innovations at Slush, Helsinki, Planet AI showcased a paradigm-altering platform called the PlanetBrain—a universal cognitive system for text, speech, and image recognition that transcends beyond Optical Character Recognition (OCR) systems of the current generation. Developed in tandem with Europe's largest Horizon 2020 research projects "READ" and "NewsEye," PlanetBrain demonstrated the comprehension of 11 billion handwritten documents of 1500s and 1800s time period, originating from various geographies across Europe. However, abilities demonstrated at Slush are just the tip of the iceberg in terms what the Planet AI team is capable of. The cumulative intelligence of PlanetBrain promises a future for emergent learning: The birth of an AI scientist that is generative, creative, and efficient.

Narrating their journey of developing such a cognitive intelligence, Welf Wustlich, CTO of Planet AI, begins by stating, "Think of our artificial intelligence (AI)—PlanetBrain—as a framework that is capable of comprehending and analysing content of any format, be it text, audio, image, or even video. It extracts and classifies information, summarises documents, and analyses data sets."

PlanetBrain is business agnostic. It can be applied to a multitude of operations, wherein the cognitive intelligence module evolves consistently from an 'AI Engine' to an 'AI Assistant' and then to an 'AI Counselor', steadily growing as an 'AI Scientist' as it progresses in the cycle of evolution by comprehending various formats of data. PlanetBrain is capable of understanding the relationships between data sets without the need for any form of pre-processing, feeding

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relevant information to the system instead. These developments are figuratively nurturing PlanetBrain on an R&D roadmap that Planet AI calls 'AIvolution.'

### The Origin of Deep and Universal Sequence Understanding

PlanetBrain is designed to digest data sets from numerous industry verticals such as medicine, document analysis, logistics, traffic surveillance, and mobility-driven ecosystems by enabling industry leaders to streamline the process of content search, extraction, and analysis. The highly competent experts at Planet AI have developed a 'PerceptionMatrix' that provisions an unprecedented search of images, texts, and speech, supplementing PlanetBrain's functionalities. It employs 'human information processing' techniques—considered as a deep and universal sequence—to understand various forms of data. Leveraging artificial intelligence, PlanetBrain evolves consistently toward a greater 'Deep Universal Sequence Understanding,' and aspires to traverse along the lines of an Artificial General Intelligence (AGI), also known as General Purpose AI in its long term roadmap. Such an evolution of intelligence paves the way for advanced decision-making capabilities, similar to that of a human being, in terms of how data sets are analysed for sequence understanding. For example, each input of data enables the AI module to churn the information fed into the system and generate a sophisticated output that increases the overall productivity of the user aiming to comprehend the information at hand. A longer input sequence of data could potentially trigger a short output in the form of an action, and contrastingly, a shorter input sequence could result in a longer output based on the complexity of information. Wustlich breaks down the technological terminologies of

this process by stating, "Our sequence-to-sequence model de-couples the output sequence from the input sequence, enabling the AI module to understand the data fed to the system and generating a sophisticated output based on the internal representations, pre-processing parameters, and task guided attention. To understand this in a simplistic manner, consider the example of an audio translation or summarisation or even responding to a question. The key ingredient of this coupling is called a generator. When information is fed into the system and the generator understands the task at hand, it starts producing the desired output." Such a sequence-to-sequence approach forms the foundation of PlanetBrain, further bolstered by the company's PerceptionMatrix, Augmented Memory, and Augmented Attention Control modules.



Following this comprehensive roadmap, Planet AI has released an extensive portfolio of products for various industries such as insurance, wherein the processing of incoming posts and documents need to be scanned and documented by internal departments. ArgusSearch, AddressRecognition, and Intelligent Document Analysis (IDA) are a few noteworthy mentions of Planet AI's portfolio. ArgusSearch derives its feature sets from the company's patented PerceptionMatrix for search functionalities, allowing users to access the 'internal meaning representation' of PlanetBrain. It allows the PerceptionMatrix to analyse information without the need to delve into raw data sets such as transcriptions, and this function has been one of the quintessential reasons for Planet AI winning numerous international competitions. Similarly, AddressRecognition is tailored for the parsing and reading of postal references at an extremely high data recognition rates. By integrating the ArgusSearch and AddressRecognition modules of PlanetBrain, IDA summarises and answers questions pertaining to the content that is fed into PlanetBrain. Collectively, these feature sets are capable of document classification, information extraction, and entity recognition of various types. Case in point, Transkribus

and Adam Matthews Digital are two of the renowned research organisations that greatly benefited from the PlanetBrain technology by analysing content from millions of ancient handwritten documents for educational purposes.

### Transcending the Barriers of Cognitive Intelligence

PlanetBrain's applicability spans diverse industry verticals. In the medical sector, it functions as a personal health advisor that assists healthcare professionals in enhancing their clinical efficiency and reducing discrepancies in diagnosis. Along similar lines, Planet AI's address recognition engine bolsters logistics vendors in the United States and the European regions, helping them streamline operations related to shipments, letters, and mailing services. This functionality also detects and tracks vehicles from a traffic surveillance standpoint to read license plates, thereby supporting law enforcers to navigate through day-to-day hindrances. The diversity of PlanetBrain also extends to mobile application development, whereby organisations can provide insights to their user demographic.

Planet AI recently partnered with IBM to implement a system for one of Germany's largest insurance companies to process incoming mails. One of the examples that substantiate this collaboration is running 300,000 letters through the system and scanning the documents automatically to obtain relevant information sets. The process comprised of document transcription, converting them from portable document formats (PDF) to ASCII codes, wherein the documents comprise of images, ASCII or Unicode, MetaData, and Content information. This was followed by classifying documents and extracting information such as names, dates, numbers, and similar data types. Case in point: If the input is in images or PDFs, output could be PDFs or Jason or XML; the output data is contextualized with the inputs and enriched by ASCII or Unicode. Currently, the system implemented for the insurance client is set to serve larger organisations around the world.

PlanetBrain also assists organisations in the logistics sector in comprehending postal addresses through processes ranging from finding addresses, reading them, identifying all named entities, classifying sender and receiver. Organisations specialising in the logistics sector are tasked with a herculean job of standardising the postal codes as the manner in which addresses are written on shipments vary from country

to country. PlanetBrain supports such firms in analysing and organising postal addresses by recognising the characters written on shipment dockets, thereby automating the process of logistics to a considerable extent.

### Nurturing a Cognitive Supremacy

On the research end of the spectrum, Planet AI is set to enhance its technological portfolio further to help historians understand the cultural heritage of the European region, following its collaboration with the horizon 2020 initiative. "We have already completed a three-year project with our 12 leading European partners who are historians in their area of expertise. We will soon be heading toward the beginning of the second three-year project, helping historians analyse the cultural heritage of this part of the world by comprehending handwritten documents of 11 billion pages," adds Wustlich. The company is also rolling out upgradations to overhaul the finance, healthcare, insurance, and government marketplaces, in an effort to exploit their technology to reap maximum rewards.

In the healthcare sector alone, Planet AI is making efforts to understand the significance and effects of medicines in the various diagnostic procedures. By taking into account the personal health records of patients, Planet AI is assisting medical practitioners with preventive measures, relevant to the current day and age, which could benefit the healthcare industry on a larger scale. The company is launching three new projects with its European partners in the healthcare sector for early stroke detection, prevention, and classification. Planet AI is actively taking leaps and strides in helping patients through their course of diagnosis by tapping into their electronic health record analysis.

These milestones and achievements offer a promising avenue for the future of cognitive intelligence, illustrating the sophistication of AI-driven technologies that not only make the world a better place but also eliminate redundancies that would otherwise stall the productivity of organisations in various industry verticals. It seldom comes as a surprise that Planet AI has already won more than eight international awards for empowering clients in insurance, finance, healthcare, government, and law enforcement sectors through their ingenious efforts in the cognitive intelligence space. **CR**

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