Cognitive Computing in Education

Cognitive Computing, AI, and ML are some of the trending buzzwords of this generation. The rapid pace at which these technologies are integrating with our day-to-day lives has turned them into a massive force in driving the global economy and formulating sustainable development strategies. These topics are gradually becoming subjects of increasing importance in both academia and industry. People around the world have been investing their valuable time and resources in investigating the potential applications of these technologies in different sectors. One of the most promising applications is the sustainability of education.

While Artificial intelligence aims to solve a given problem through the best possible algorithm, Cognitive computing is a subset of Artificial intelligence that aims to mimic human behavior, thoughts, and actions. Both facilitate computer vision, self-teaching algorithms, natural language processing, and data mining to solve complex problems. Based on their ability to acknowledge, reason, and learn, they can be quite useful in shattering the traditional educational system and fostering sustainable growth in this domain. These technologies can introduce several new products that can prove quite beneficial for all the stakeholders involved in this sector.

Vikram Goyal,
Project Director,
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Today, when students are forced to learn at the same pace, and a teacher cannot give equal attention to everyone in the class, these cognitive agents can be a game-changer. They can analyze the educational parameters of a student: aptitude, logical reasoning, speed, and preferred mode of learning and use this information to create personalized course work. The system can also adapt itself according to the needs and responses of a student, solve doubts instantly and notify the teacher so that required action can be taken immediately. This will not only help students gain more confidence but also provide an added advantage to those who face social anxiety by eliminating many uncomfortable interactions.

Teachers can also leverage this technology by automating their day-to-day classroom activities such as checking answer scripts, preparing mark sheets, and keeping a proper eye on academically challenged students. They can contextualize and personalize their lecture slides to make them more interactive and convey their insights in a meaningful way.

The applications are not limited to classroom settings and can also be deployed by the administrative services and support staff to make things easier and efficient. The segregated specialized divisions, such as student finance, academic support, hostel support, career support, can use these cognitive services to address the concerns of students and automate the notification process to keep them updated with any changes. This will save valuable time and resources and increase the overall efficiency of the response system.

Libraries can deploy this system to catalog their offline books, digital content, and research papers to enable faster search access for both students and faculty. Career counselors, which are often understaffed, can also enhance their role on campus by providing comprehensive service to students who seek their advice.

Cognitive computing and Artificial Intelligence are bound to become ubiquitous in the educational sector. Various services availed by different stakeholders of this field are set to utilize one or more features of these emerging technologies. Their proper usage can ramp up the educational standards of any college, university, or school to deliver advanced services that will not only increase student retention but also expand the academic horizon beyond their walls. Many academic communities are all set to install these changes for uplifting their intellectual structure.

Cognitive Computing trends and innovations in Legal domain

The global legal service market has been growing at a compound annual growth rate (CAGR) of 3.4% since 2015, and reached a value of around $713.7 billion in 2020. As per a report by Statista, this value will reach $908.26 billion by 2025, growing at a rate of 4.9% from 2021 to 2025.

The field of law has remained largely under digitized and rather slow to adopt new technologies and tools for far too long. However, change is underway and Cognitive Computing will play a huge role in transforming the age-old traditional practices of the legal industry worldwide. Technology has the potential to revolutionize every aspect of the legal field, from law firms and the corporate legal field to courtroom operations and handling of the enormous number of documents involved.

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Documentation, in particular, has notoriously been a pain point for clients and corporations alike. This is why legal research has continued to be a cumbersome task since ages. Machines sort documents considerably faster than humans can, and they can produce output and results that can be statistically evaluated. Machines may review papers and designate them as important to a certain case using AI-powered software, which improves the speed of document analysis for legal usage. Machine learning algorithms can work to locate other documents that might also be relevant once a specific sort of document has been identified as relevant. They can help human workers by finding the documents that can be useful, rather than requiring people to research and analyze all documents.

Mammoth online legal data resources, such as LexisNexis and Practical Law, are constantly improving their search engines to help lawyers find material relevant to their cases faster and quicker. Lex Machina, an AI tool, also assists lawyers in creating a case strategy based on previous results in similar cases. Lawyers can also seek assistance in summarization and note-taking, saving considerable amounts of time.

Automation of documents is another innovation that can help with the qualms of documentation. Automation software is a way to assist users avoid the legal jargon of a document template. By presenting them with a questionnaire that collects pertinent data, it helps the user by simplifying the document generation process. The required data and elements are then automatically placed into the final document, which is generated by the system and subsequently provided to the user, based on the input provided. By getting rid of inefficiencies along the way in this manner, documents can now be made in minutes rather than days.

Simplification like this means that law, which was previously an industry with strong gate-keeping, becomes a lot more accessible to the common person. There have been attempts to make chatbots to help people learn about legal proceedings. Corporations, too, are using chatbots that enable both clients and lawyers. A Lawyer Bot, for example, is a software that can automate tasks typically performed by lawyers. These bots are excellent for increasing the speed of work and providing a better experience by allowing clients to self-serve online. For example, people in UK are using a chatbot called DoNotPay to dispute their parking tickets. The law firm BakerHostetler uses ROSS, an IBM Watson powered supercomputing software, to handle bankruptcy cases.

Clients often ask their counsel questions like "how likely will we win, if we go for a trial?" or "Should I compromise with the other party?" Chatbots may soon even provide data-backed answers to these. Machine learning models are being developed to predict the outcomes of pending cases, by taking as input the factual patterns of similar relevant cases. AI can access large amounts of past data and help lawyers answer such questions more accurately. A start up called Blue J Legal is developing an AI-powered legal prediction engine with an initial focus on tax laws.

Such efficiency and automation can also be introduced to contract review. After a contract is signed, overseeing and supervising it is usually a hassle. Especially in the case of large corporations which have countless pending contracts and counterparties spread across several divisions. Various NLP-powered solutions that derive and appraise vital facts across a firm's core of contracts have begun to be produced, simplifying the firm's business commitment nature for its stakeholders. They also assist the departments in staying updated with when the contracts need to be renewed. Seal Software and Kira Systems are two companies that develop such tools.

The legal market's large scale presents a strong opportunity for value creation and is a market for creativity. Although, the introduction of these technologies may be slow, one can be excited because they will certainly renew the legal business in the near future.

Chanakya Fellowships for UG & PG Students

One of the major goals of iHub Anubhuti is Human Resource Development in the vertical of Cognitive Computing and Social Sensing. iHub Anubhuti is looking towards to support manpower at different levels, such as under-graduates, graduates, PhDs, Postdocs, engineers.

We at iHub Anubhuti are in constant endeavor to fulfill this goal and the Chanakya Fellowship is one such initiative taken up by iHub. The fellowships were recently announced through an open call for inviting applications for UG and PG fellowships.

iHub Anubhuti's Comprehensive and Holistic Advancement of National Knowledge Yield and Analytics (CHANAKYA) fellowship provides great opportunity for the students to enhance their learning, explore entrepreneur skills and innovate across domains. This initiative will also help in providing a platform for the students to work on a real problem of industry and solve it using CPS. iHub announced the call for 40 UG fellowships for the duration of 10 months and 8 PG fellowships for the duration of 24 months.

Sanctioned projects

iHub Anubhuti is committed to create an ecosystem that promotes entrepreneurship in the field of Cyber Physical Systems (CPS), establish a network of collaborators, skill development, along with Fundamental Research.

To support this commitment iHub sanctioned 28 research projects, majorly focussing on **Healthcare, Legal informatics, Education and Sustainability**. The Grant letters were issued to the Principal Investigators and process of funding and hiring has been started as per requirement of the projects.

The projects for funding were selected from various esteemed Institutes like, IIITD, Ashoka University, PGI, NIT Kurukshetra, IIT Patna, IIIT Hyderabad and IIT Kanpur.

September Webinar

This talk was on how we've built our systems to bridge the divide between machine intelligence and human expertise so that they work together as a team to provide this "**Cardiology as a Service**" at scale, accurately and quickly.

How we built Machine Intelligence to help doctors save lives

Abstract: 7.2 million people die of heart disease every year. 50% of these lives can be saved if heart attacks can be diagnosed quickly and treatment coordinated within the golden hour. Diagnosing heart disease requires a simple test called an ECG, unfortunately, interpreting the ECG accurately requires a specialist. But, how do we put the skills of a cardiologist in every corner of the globe ? How do we equip a GP in India or a nurse in sub-Saharan Africa or a medical attendant in Buenos Aires to be able to help diagnose a heart attack and start treatment?

Tricog provides real time cardiac diagnosis amplifying the work of few doctors to reach out to all patients worldwide. We've built specialised AI powered algorithms to help our resident doctors with the diagnosis, which is then sent back to the remote centre, thus enabling a doctor or a health care worker in any remote location to diagnose and initiate treatment for heart disease, thus saving lives.

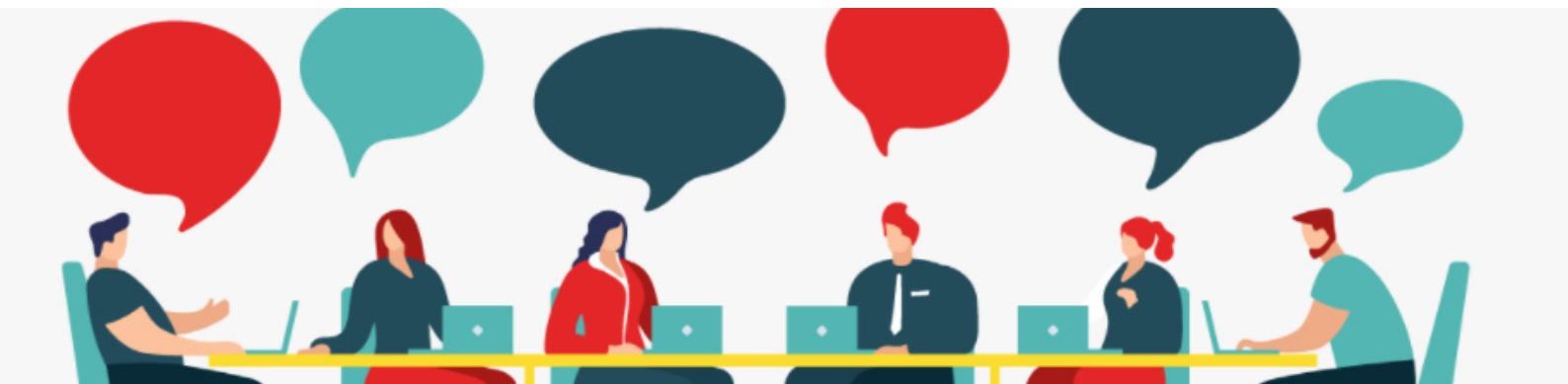Zainul Charbiwala
Co-Founder and CTO,
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