Department of
COMPUTER SCIENCE & ENGINEERING

TECH-EXPLORER

Technical Magazine

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NARAYANA
ENGINEERING COLLEGE
NELLORE (AUTONOMOUS)

ACCREDITED WITH GRADE A+ NAAC

Vision of the institute

To be one of the nation's premier Institutions for Technical and Management Education and a key contributor for Technological and Socio-economic Development of the Nation.

Mission of the institute

To produce technically competent Engineers and Managers by maintaining high academic standards, world class infrastructure and core instructions.

To enhance innovative skills and multi disciplinary approach of students through well experienced faculty and industry interactions.

To inculcate global perspective and attitude of students to face real world challenges by developing leadership qualities, lifelong learning abilities and ethical values.

Vision of the Department

To be a choice for education in the area of Computer Science and Engineering, serve as a valuable resource for IT industry & society and exhibit creativity, innovation and ethics to cater the global challenges.

Mission of the Department

M1: To educate learners by adapting innovative pedagogies for enhancing their cognitive skills, technical competence and lifelong learning.

M2: To provide training programs and guidance to learners through industry institute partnerships, social awareness programs, internships, competitions and project works to inculcate research skills toaddress the global challenges.

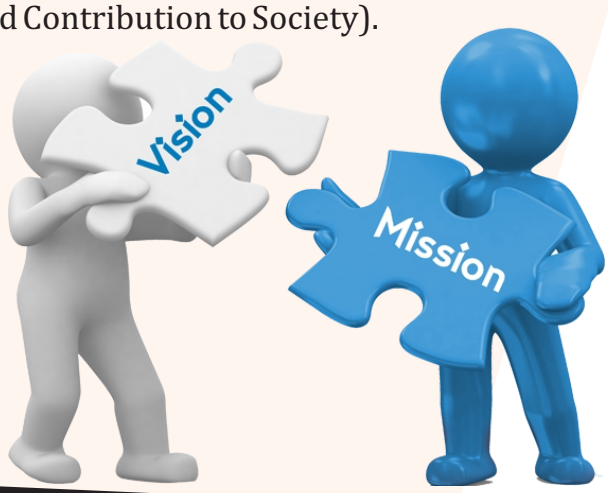
M3: To provide opportunities for students to practice professional, social and ethical responsibilities using IT expertise with a blend of leadership and entrepreneurial skills.

PEOS

PEO-1 : Procure employment/progress towards higher degree and practice successfully in the CS/IT profession. (Successful Career Goals).

PEO-2 : Address complex problems by adapting to rapidly changing IT technologies. (Professional Competency).

PEO-3 : Gain respect and trust of others as effective and ethical team member by demonstrating professionalism and functioning effectively in team-oriented and open-ended activities in industry and society. (Leadership, Ethics and Contribution to Society).



(PROGRAM SPECIFIC OUTCOMES) PSOs

Domain Specific Knowledge: Apply the relevant techniques to develop solutions in the domains of algorithms, system software, computer programming, multimedia, web, data and networking.

Software Product Development: Apply the design and deployment principles to deliver a quality software product for the success of business of varying complexity.

(PROGRAM OUTCOMES) POs

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multi disciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. LIFE-LONG LEARNING: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

FACULTY

DECISION INTELLIGENCE

Business intelligence (BI) platforms are evolving. By adding artificial intelligence and machine learning, companies are transforming data dashboards and business analytics into more comprehensive decision support platforms. This movement toward decision intelligence sees its sophisticated mix of tools increasingly embedded into enterprise workflows, when and where decision-makers need them most.

Decision intelligence is the ability of the enterprise to process large amounts of data to make decisions, says Nicole France, analyst at Constellation Research. It's the same thing that business intelligence was going to do, but accessible throughout the enterprise.

What is a Decision?

Decision-making is the process of making choices, by collecting all the relevant information required for making a decision.

If there are two paths in front of us- Path A and Path B and we need to decide which one should we take, we'll make our decision keeping in mind what could be the possible outcome if we choose Path A, and similarly with Path B. And for that we'll need some information related to these paths, for instance, we might recall our previous experiences related to these paths or ask anyone nearby.

Decision Intelligence

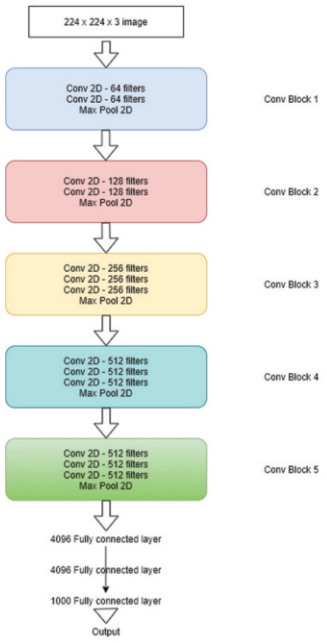
Decision intelligence (DI) solves the world's most complex problems or wicked problems as they say. It connects human decision-makers to technologies like machine learning, AI, deep learning, visual decision modeling, complex systems modeling, big data, predictive analytics, UX design, statistical analysis, business intelligence, business process management, causal reasoning, evidence-based analysis, and more.

Mr. SK. Saddam Hussain
Assistant Professor

CREATING VGG FROM SCRATCH USING TENSORFLOW

LeNet-5 was one of the oldest convolutional neural network architectures, designed by Yann LeCun in 1998, which was used to recognize handwritten digits. It used 5x5 filters, average pooling, and no padding. But by modern standards, this was a very small neural network and had only 60 thousand parameters. Nowadays, we see networks that have a range of 10 million to a few billion parameters. The next big Convolutional neural network that revolutionized the use of a convolutional network was AlexNet which had approximately 60 million parameters. The first layer of AlexNet uses 96 filters with kernel size 11x11, with strides of 4. The next layer uses 3x3 filters, and so on. Also, AlexNet uses Max Pooling and padding, which were not used in LeNet-5. AlexNet was very similar to LeNet-5, but it was much bigger. Also, AlexNet uses the ReLU activation function, while LeNet-5 mainly used the Sigmoid activation. What these networks had in common is that, as we go deeper into the network, the size of the tensor kept on decreasing, while the number of channels kept on increasing.

The next big convolutional neural network was the VGG network. The remarkable thing about VGG was that, instead of having so many hyperparameters, the authors used a much simpler network, where the focus was on using convolutional layers with small sizes of 3x3 filters, with a stride of 1 and using the 'same' padding, a and make all the MaxPooling layers 2x2 with a stride of 2.VGG greatly simplified the previously made neural network architectures.



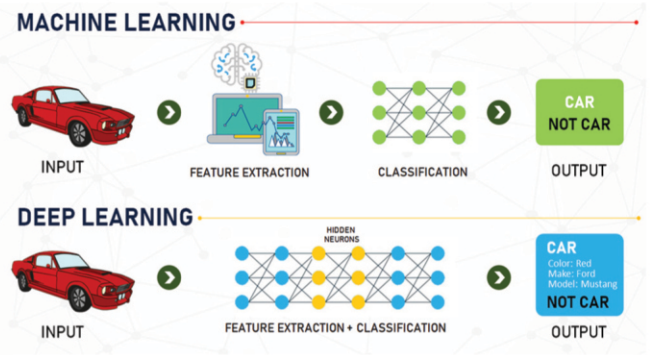
A. Chaithra
17711A0502, IV CSE

STUDENTS

DEEP LEARNING APPLICATIONS AND CHALLEGES IN BIG DATA ANALYTICS

Big Data Analytics and Deep Learning are two high-focus of data science. Big Data has become important as many organizations both public and private have been collecting massive amounts of domain-specific information, which can contain useful information about problems such as national intelligence, cyber security, fraud detection, marketing, and medical informatics. Companies such as Google and Microsoft are analyzing large volumes of data for business analysis and decisions, impacting existing and future technology.

Deep Learning algorithms extract high-level, complex abstractions as data representations through a hierarchical learning process. Complex abstractions are learnt at a given level based on relatively simpler abstractions formulated in the preceding level in the hierarchy. A key benefit of Deep Learning is the analysis and learning of massive amounts of unsupervised data, making it a valuable tool for Big Data Analytics where raw data is largely unlabeled and un-categorized.In the present study, we explore how Deep Learning can be utilized for addressing some important problems in Big Data Analytics, including extracting complex patterns from massive volumes of data, semantic indexing, data tagging, fast information retrieval, and simplifying discriminative tasks.



Some aspects of Deep Learning research that need further exploration to incorporate specific challenges introduced by Big Data Analytics, including streaming data, high-dimensional data, scalability of models, and distributed computing. We conclude by presenting insights into relevant future works by posing some questions, including defining data sampling criteria, domain adaptation modeling, defining criteria for obtaining useful data abstractions, improving semantic indexing, semi-supervised learning, and active learning.

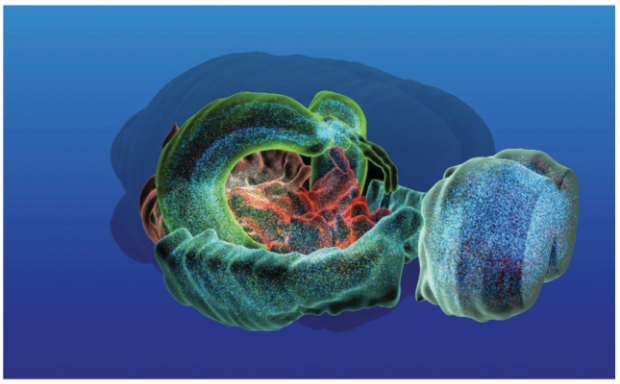
P. Sai Sanjana
17711A0547, IV CSE

BLUE BRAIN TECHNOLOGY: A SUBWAY TO ARTIFICIAL INTELLIGENCE

One of the most noteworthy ongoing projects is the Project Blue Brain.This revolu onary finding has the poten al to shape the future to enormous extents. IBM in partnership with scien sts at Ecole Polytechnique Federal De Lausanne's (EPFL) Brain and Mind Ins tute, will begin simulating the brain's biological system. It was founded by Henry Markram at the EPFL in May 2005 and is expected to near comple on around 2023.

What is Blue Brain?

Blue Brain is the name of the world's first virtual brain. A Virtual machine is one that can function as, a very appropriate application of an Artificial Intelligence human brain. Reverse engineering is a foremost concept of implementing the human brain and recreate it at the cellular level inside a complete simulation. The four major motivations behind the Blue Brain Technology are treatment of brain disfunctioning, scientific curiosity about consciousness and human mind, a bottom up approach towards building thinking machine and databases of all neuroscientific research results and related past stories. There are three main steps to build the virtual brain are data acquisition, simulation and visualization of results. The mission is undertaking the Blue Brain technology is to gather all existing knowledge of the brain, raise the global research efficiency of reverse engineering and to build a complete theoretical framework.



The aim of Blue Brain is to establish simulation neuroscience as a complementary approach alongside experimental, theoretical and clinical neuroscience to understanding the brain, by building the world's first biologically detailed digital reconstructions and simulations of the mouse brain.

The supercomputer-based simulations and reconstructions built by Blue Brain offer a radically new approach for understanding the multi-level structure and function of the brain.

P. Kavya
17711A0550, IV CSE

How to crack Campus placement Interviews

Most of the placements processes that take place on-campus follow the following steps:
Aptitude Test
Technical Interview
HR Interview

Given below are some of tips that can help you crack these interviews and get placed through campus placements:

1. Most of the aptitude tests consist of basic school level maths, logical and verbal questions. You can practice these questions through various online websites such as indiabix.com or from books such as the RS Agarwal book. You might not need much practice if you were good at maths in school.

2. Prepare well in advance for the technical interview. The panel might ask you any questions from any of the subjects that you have studied since first year. Also make sure you know the syllabus of the subjects that you have in your current semester. Preparing for interviews/placements is no excuse to neglect your college studies.

3. During the interview, be calm. The company is here because they want to hire you as much as you want to be hired. When asked a question it's alright to pause and take a moment to collect your ideas.

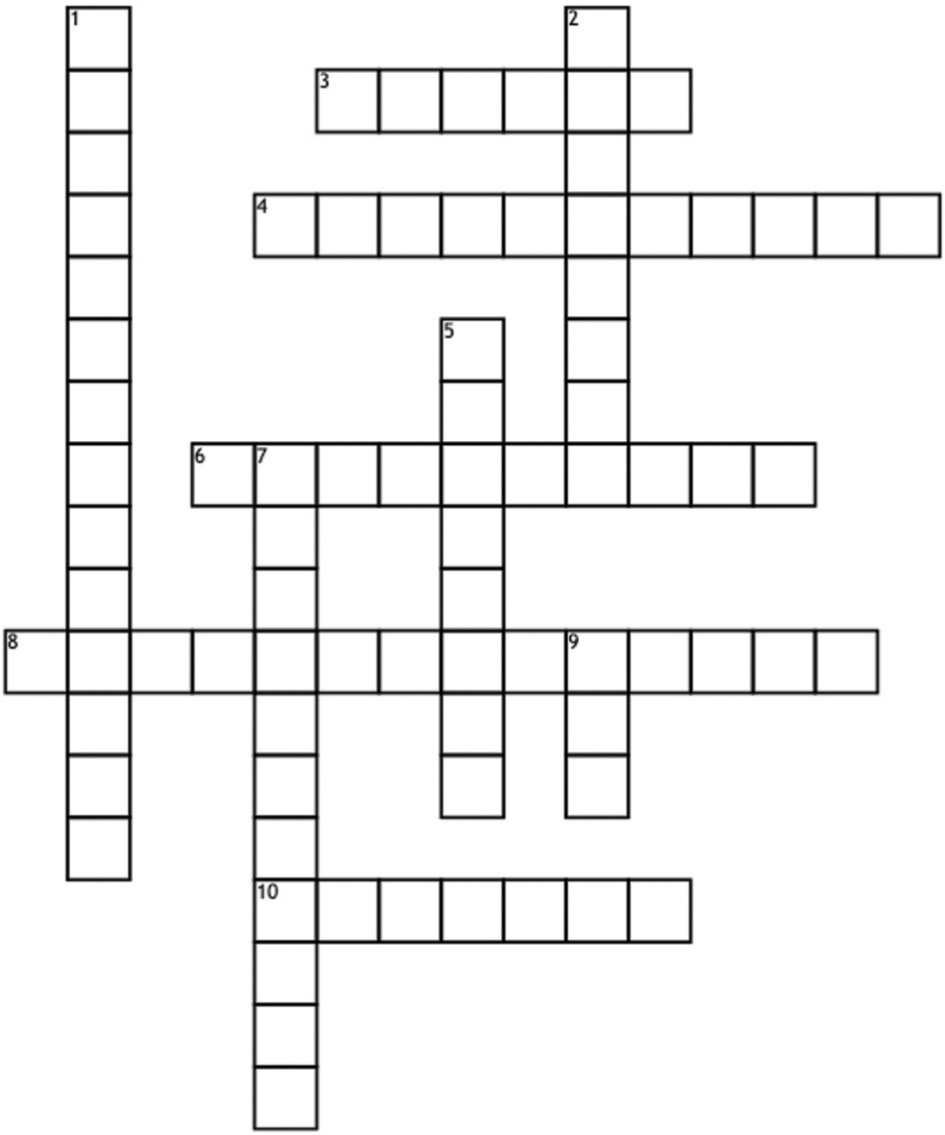
4. In the HR interview, the panel will ask you basic questions about your strengths and weaknesses, your background, why they should hire you etc. You should prepare such questions in advance. It's not a good sign if the panel asks about your strengths and you sit and wonder what those are while in front of them. The candidate should have evaluated themselves before anyone else can.

I hope this helps you in getting the basic idea of how to go about preparing for campus placements. I wish you all the best. Do well. :)

D. Rohith Sai
16711A0567, Alumni

CROSS PUZZLE ON COMPUTER & INTERNET

Computer Programming



Across

3. A language that emphasizes less wordy commands

4. Converts the programming language into machine code AS IT RUNS

6. Word based program that can take time to learn

8. Creator of the analytical engine

10. A collection of pre-scripted commands that someone can use in their programs

Down

1. A computer program set up to run like a computer inside a computer

2. Converts the programming language to machine code AHEAD OF TIME.

5. The low level language that speaks to the computer

7. The creator of the first program. (It never actually ran)

9. A mistake in programming

IMPORTANT WEBSITES

- OLDOC.COM Free Online Dictionary of Computing
- Net Lingo A dictionary of Internet terms.
- Tech Web An encyclopedia of Internet terms.
- webopedia.com An online dictionary and search engine for computer and related technology terms.
- Virtual Museum of Computing (VMoc) includes an eclectic collection of World Wide Web (WWW) hyperlinks connected with the history of computing and on-line computer-based exhibits available both locally and around the world.
- Software History Center
- Cover Pages: online resource for markup language technologies.
- IEEE History Center: Preserving, Researching, and Promoting the Legacy of Electrical Engineering and Computing.
- Computer History Museum is the world's largest and most significant history museum for preserving and presenting the computing revolution and its impact on the human experience. Federal Government Resources
- Final Report of the National Commission on New Technology Uses of Copyrighted Works
- NASA Careers Information on careers with the National Security Agency.
- CSRI (Computer Science Research Institute) brings university faculty and students to Sandia National Laboratories for focused collaborative research on DOE computer and computational science problems. The CSRI is organized under the DOE Stockpile Computing Program. CSRI provides a mechanism by which university researchers learn about problems in computer and computational science at DOE Laboratories.
- NIST (National Institute of Standards and Technology) Provides links to resources which were chosen to enhance and support the research needs of NIST scientific and administrative personnel. NIST's Computer Science areas of research include: computer security, software testing, information access, networking, and convergent information systems.
- Official website of the National Center for Computational Sciences.
- Science.gov A-Z listing of Computer Science topics from the National Government website.