



# Dr. N.G.P. ARTS AND SCIENCE COLLEGE

An Autonomous Institution, Approved by Government of Tamil Nadu  
Affiliated to Bharathiar University, Coimbatore. Re-accredited by NAAC with 'A' Grade

Coimbatore - 641 048

## News Letter 2017-2018

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### Department of Computer Applications

#### PROGRAMME EDUCATIONAL OBJECTIVES

- To provide students with a strong foundation in the mathematical, logical skills and Programming ability to solve and analyze computing problems to prepare them for graduate studies, consultancy and higher learning.
- To inculcate students professional and ethical attitude, effective communication skill, teamwork, and ability to relate engineering to global perspective issues and social context.
- To excel in problem solving and programming skills in various IT Fields.
- To progress students demonstrate their ability to adapt to a rapidly changing environment by having learned and applied new skills and new technologies.
- To train future industry professional
- To continue a lifelong professional development in computing that contributes in self and societal growth.



## Activities for the Academic year 2017-2018

### Association Activities

#### Intercollegiate Meet

A National Level Technical symposium was conducted on 8th February 2018. 122 Students from 32 different colleges like PSG Tech, Sri Krishna college of technology, Nanda Arts and Science college, PSGR Krishnammal college for women, Sri Guru Institute of technology, Kongu Arts and Science college, CMS, karpagam, KG, SNMV, Hindustan etc., participated. The events conducted were Paper Presentation, Technical Quiz, code chef, web designing, Marketing, Photography.

#### Guest Lectures

- Guest Lecture “Data Science” was given by Mr.Karthik Veer, Chief Learner, Black Board learning, Chennai was held on 6th July 2017.
- Guest Lecture “Internet of Things” was given by Mr.Aravind Govindraj, Technical Consultant, UTL Technologies, Coimbatore was held on 30th August 2017.
- Guest Lecture “How to get ready to face IT needs” was given by N.Sivaraman, Senior Product Analyst, Standard Chartered GBS India, Chennai was held on 24th October 2017.
- Guest Lecture “Soft Skills” was given by DR.PRadha, Assistant Professor, Government Arts college, Coimbatore was held on 2nd March 2018

#### Intra-departmental meet

- One day Intra Departmental Meet “TALENTINA2K17” was held on 22nd July 2017. The events conducted were Paper Presentation, Poster Presentation, Quiz, Tech-connect, Code-Quest, Young Tesla.

#### Workshop

- Workshop on Data Visualization Tool : Tableau held was from 7th August 2017 to 12th August 2017 by Mr.Karthik Veer, Chief Learner, Black Board learning, Chennai.
- Workshop on Personality Development Program was held on 18th August 2017 to 21st August by Mr. Aravind Kuppasamy, Trainer, Xplore IT Corp, Coimbatore.
- Workshop on Python Programming was held on 14th September 2017 to 15th September by Mr. A. Gobinath, Xplore IT Corp, Coimbatore
- Workshop on Mobile Application Development - Android was held on 18th December 2017 to 19th December 2017 by Mr.K.Naveen Kumar, Ms.E.Keerthana, Technical Instructor, Discover Knowledge Tech Solutions, Coimbatore

## Placement Readiness Programme

- Placement Readiness Programme on Skills gap: What do Employers want from fresher's? was held on 23rd June 2017 by Sinha Madhuri (Alumni), Wipro Technologies Pvt.Ltd., Bangalore, India.
- Two days Placement Readiness Programme on Aptitude and Softskills Training was held on 18th December 2017 and 19th December 2017 by Dr.K.Mangayarkarasi, Research Associate, Bharathiar University, Coimbatore.
- Two days Placement Readiness Programme on Aptitude and Soft skills Training was held on 23rd January 2018 and 24th January 2018 by Dr.K.Mangayarkarasi, Research Associate, Bharathiar University, Coimbatore.
- Placement Readiness Programme on Alumni Interaction Open Forum was held on 31st January 2018 by Jeenath T.K.(Alumni) Senior IT Analyst, Intellectyx Data Science Software solutions, Coimbatore.

#### Extension Activity

- Extension activity on “Cyber Crime Awareness Programme” for Vellanaipatti village was conducted on 16th August 2017 by BCA students.
- Extension activity on “ICT Based Learning” for the school students of Panchayat Union Middle School, was conducted on 13th October 2017 by BCA students.
- Extension activity on “Role of Computer – Higher Studies” for the Govt. Hr. Sec. School, Arasur was conducted on 20th February 2018 by BCA students.

#### Online Certification

The faculty members and students have got more than 500 certifies with Elite by NPTEL, Udmey, courseera, Spoken tutorial and Microsoft Virtual Academy online course during the Academic year (2017-2018)



## Program by students

- Journal Club activity is being conducted every Wednesday for the final year students.
- Student Seminar is being conducted as a part of continuous assessment for first year students.
- Every day after the regular class hour Students Personality Development Programs like Students Seminar, Group Discussion, Talent talk, Quiz, Mock Interviews, Role play, Debate on Current issues, Aptitude, Entrance exam preparation, Innovation activity/Talent activity are conducted as placement activities.
- Final year students conducted Knowledge sharing session for the second year students who attended internship training
- Tips for placement - Motivational class was conducted by final year placed students to the second years.

## Linkages with Professional body

The Department has links with Professional body Computer Society of India and has a student Branch DR N.G.P CSI Student Chapter for the betterment of the students through number of Student Development Programmers.

## Academic Achievements

### Pass percentage

Final year BCA students have secured 92 % (out gone) result in April 2017 examinations.

### Proficiency

- S. Reneesh of I BCA 'A' has secured 87%.
- M. Banupriya of II BCA 'A' has secured 89%.
- J. Gatyathri of III BCA 'B' has secured 91%.

## Sports Achievements

- B.Prabhu - III BCA 'A' has won bronze medal in All India University Level power lifting competitions was held at Punjab on 5th February .2018.
- S. Manojkumar - III BCA 'A' has participated in All India University Level power lifting competitions was held at Punjab on 5th February 2018.
- B.Prabhu - III BCA 'A' has won gold medal in power lifting in inter-collegiate Tournaments was held at Bharthiar University on 25th September 2017
- S. Manojkumar - III BCA 'A' has won gold medal in power lifting in inter-collegiate Tournaments was held at Bharthiar University on 25th September 2017

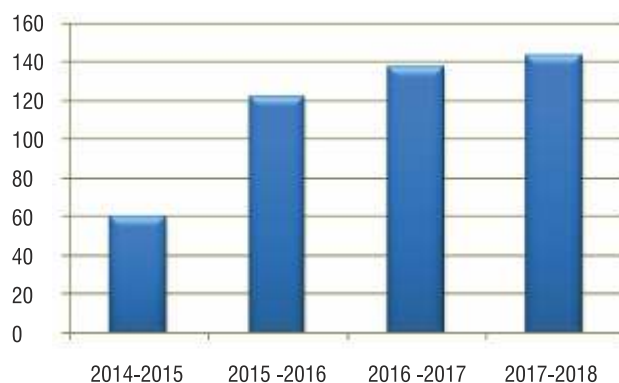
## Placement Achievement

2017 - 2018

Total offers - 143

 3	 4	 6
 2	 12	 5
 32	 9	 7
 2	 19	 2
 4	 4	 5
 4	 1	 5
 2	 1	 3
 6	 2	 1

## Number of Offers



Registered	80
Number of offers	143
Individual offer	74
Two offers	42
Three offers	16
Four offers	7
Five offers	3
Six offers	1

## Achievements by the Student in Inter college competitions

More than 50 students from BCA eagerly participated in various competitions like Paper Presentation, Debugging, Quiz, Marketing etc which was conducted by various colleges.

S. No.	Name of the Student	Event	College	DATE	Prize
1.	CibiChandran.S I BCA A Thurkkeeswaran I BCA B	Wastechnology	Dept of computer Technology Dr. NGP Arts and Science College	14-07-2017	1st Prize
2.	Vishnu R II BCA A Subash S II BCA A	Connections	Dept of computer Science Dr. NGP Arts and Science College	21-09-2017	2nd Prize
3.	Narmatha S II BCA A Dhivya M II BCA A	Paper Presentation	Dept of PG and Research of computer Science Dr. NGP Arts and Science College	26-09-2017	2nd Prize
4.	Ranjith Kumar J D III BCA B Sivanandam S II BCAB	Quiz	Dept of PG and Research of computer Science Dr. NGP Arts and Science College	26-09-2017	3rd Prize
5.	Gayathri J III BCAB Shifani Maheshwari III BCA B	Debate	Dept of PG and Research of computer Science Dr. NGP Arts and Science College	26-09-2017	2nd Prize
6.	B. Surya R. SivaKumar	Quiz	Dept of PG and Research of computer Science Dr. NGP Arts and Science College	03-01-2018	3rd Prize
7.	M. Divya S. Narmatha	Paper Presentation	Dept of PG and Research of computer Science Dr. NGP Arts and Science College	03-01-2018	3rd Prize
8.	R.B. Aravindhan R. Vishnu N. Deepak T. VishnuBharath	Treasurehunt	Dept of PG and Research of computer Science Dr. NGP Arts and Science College	03-01-2018	2nd Prize
9.	S. Bumineela R. Monica	Poster Presentation	Dept of PG and Research of computer Science Dr. NGP Arts and Science College	03-01-2018	1st Prize
10.	P. Kamali M. Kanmani	Minute to win	Pioneer College of Arts and Science	02-02-2018	2nd Prize
11.	R. Sivakumar	Debugging	Karpagam Academy of Higher Education	09-02-2018	1st Prize
12.	D. Kishore V. Praveen	Connections	Karpagam Academy of Higher Education	09-02-2018	2nd Prize
13.	R. Sivakumar D. Kishore V. Praveen	Infosium	Karpagam Academy of Higher Education	09-02-2018	OverallTrophy



S. No.	Name of the Student	Event	College	DATE	Prize
14.	J.D RanjithKumar	Star of the Gateway	PSG College of Arts and Science	23-02-2018	1st Prize
15.	J.D RanjithKumar T. Vishnu Bharath	Quiz	PSG College of Arts and Science	23-02-2018	1st Prize
16.	S. SathishKumar J. Edison	Debugging	Department of IT Dr. NGP Arts and Science College	01-03-2018	1st Prize
17.	J.D RanjithKumar M. Nishanth	Make a knot	Department of IT Dr. NGP Arts and Science College	01-03-2018	1st Prize
18.	M. RameshKrishna	Gamming	Department of IT Dr. NGP Arts and Science College	01-03-2018	2nd Prize

### Achievements by Faculty

#### Paper Presentation by Faculty

- K. Suguna, presented paper on the title "An analysis of click stream data for understanding user behavior" in National Conference at Karpagam University on 22nd September 2017.
- DR.C. Kumuthini, presented paper on the title "Analysis of various security challenges in Vehicular adhoc Networks." in National Conference at Karpagam University on 22nd September 2017.
- K. Gomathy presented paper on the title "Analysis of various security challenges in Vehicular adhoc Networks" National Conference at Karpagam University on 22nd September 2017.

#### Publications by Faculty

S. No.	Author Name	Paper title	Journal Name	ISSN No	Vol & Issue	Impact Factor
1.	A. Nirmala	Medical Image Denoising by Nonlocal Means with level set baed fuzzy segmentation	Indian Journal of Science and Technology	0974-6846	Vol 10(36) September 2017	1.63
2.	K. Suguna	A Graph based similarity measure(GBSM) for finding the sematic relation between between the words in microblogs	International Journal of Applied Engineering Research (Scopus Indexed)	0973-4562	Vol 12 Number 21 December 2017	-
3.	Dr. R. Kousalya	Enhancement of traffic aware partition in mapreduce using clustering techniques	International journal of advanced research in computer science	0976-5697	Vol 8,N0.9 December 2017	0.654
4.	B. Ramya	A review on breast cancer detection using artificial neural network	International education and research journal	2454-9916	Vol3,Issue 6, june 2017	4.064
5.	Dr. R. Kousalya	An Analytical approach on Data Mining in Agri-Clinics- A Survey	International Journal of Science, Engineering and Management	2456-1304	Vol 2,Issue 12, December 2017	2.7
6.	Dr. D. Devi Aruna	A Survey on Different Techniques for Epilepsy Seizures Detection in EEG	International Journal for Research in Applied Science & Engineering Technology (IJRASET)	2321-9653	Volume 6 Issue I, January 2018	3.166
7.	Poorana Senthilkumar S	Research Survey On Vanet Issues In Table Driven And On Demand Routing Protocols	International Journal of Advanced Research in Computer Science	0976-5697	Volume 9, No. 2, March-April 2018	0.765
8.	Dinesh kumar P	Research Survey On Vanet Issues In Table Driven And On Demand Routing Protocols	International Journal of Advanced Research in Computer Science	0976-5697	Volume 9, No. 2, March-April 2018	0.765

### FDP & Workshop attended by the Faculty members in other Institution

S. No.	Name of Faculty Member	Title of the Program	Institution	DATE
1.	P. DineshKumar	Human Resource Development Centre (UGC)(FDP)	Bharathiar University	10.05.2017 to 06.06.2017
2.	R. Rajesh Kanna	NPTEL Workshop	IIT MADRAS	15.07.2017
3.	V. Sridevi	MATLAB for Solving Research Problems(workshop)	Dr. N.G.P Arts and Science College	31.07.2107
4.	Bharathi Anbarasan	MATLAB for Solving Research Problems(workshop)	Dr. N.G.P Arts and Science College	31.07.2107
5.	B. Ramya	MATLAB for Solving Research Problems(workshop)	Dr. N.G.P Arts and Science College	31.07.2107
6.	K. Suguna	Data Analytics(workshop)	Dr. G.R. Damodaran College of Science	17.08.2017
7.	DR. R. Kousalya	Data Vizualization with Tableau (workshop)	Dr. N.G.P Arts and Science College	07.08.2017 & 08.08.2017
8.	DR. C. Kumuthini	Data Vizualization with Tableau(workshop)	Dr. N.G.P Arts and Science College	07.08.2017 & 08.08.2017
9.	V. Sridevi	Data Vizualization with Tableau(workshop)	Dr. N.G.P Arts and Science College	07.08.2017 & 08.08.2017
10.	Bharathi Anbarasan	Data Vizualization with Tableau(workshop)	Dr. N.G.P Arts and Science College	07.08.2017 & 08.08.2017
11.	Poorana Senthil Kumar	Data Vizualization with Tableau(workshop)	Dr. N.G.P Arts and Science College	07.08.2017 & 08.08.2017
12.	K. Suguna	Data Vizualization with Tableau(workshop)	Dr. N.G.P Arts and Science College	07.08.2017 & 08.08.2017
13.	DR.D. Devi Aruna	Data Vizualization with Tableau(workshop)	Dr. N.G.P Arts and Science College	07.08.2017 & 08.08.2017
14.	Mr. R. Rajesh Kanna	Digital Learning Initiatives in higher education(seminar)	Terf's Academy college of Arts and Science	28.08.2017

S. No.	Name of Faculty Member	Title of the Program	College	DATE
15.	Mr. R. Rajesh Kanna	ICT enablement in choice based credit system and outcome based education for autonomous higher education institutions(workshop)	MasterSoft ERP Solutions PVT Ltd	30.08.2017
16.	Mr. R. Rajesh Kanna	Problem solving and python programming (workshop)	Dr.N.G.P Institute of Technology	09.09.2017
17.	Mr. R. Rajesh Kanna	Innovative research in pedagogy for mini-moocs blended with instruction strategies to enhance quality of higher education	Amrita university,coimbatore	23.09.2017 & 24.09.2017
18.	Dr. R. Rajesh Kanna	NPTEL workshop	IIT Madras,Coimbatore	25.01. 2018
19.	Dr. R. Rajesh Kanna	UGC-Sponsored short term course on research methodology	Bharathiar University	18.02.2018 to 24.02.2018

## STUDENT ARTICLES

### ANDROID DEVELOPMENT

Android 8.0 Oreo focuses primarily on speed and efficiency. Google's Pixel phones, for example, have seen boot times cut in half with Android 8.0 (another name for Oreo). Others are faster too, according to our testing. Pesky background activity that drains your battery and data plan have been restricted, another perk of Oreo. Android Oreo skimps on bold visual changes, but packs in useful design tweaks, like picture-in-picture (PiP) mode for multitasking with the likes of YouTube, Google Maps and Hangouts appearing in a small corner window when minimized. New notification dots on apps icons offer a colorful reminder to check out updates. Android Oreo 8.1 has launched on even fewer devices, but packs in extras, mostly concentrated on Pixel phones. AR Sticker son Pixel phones inject even more fun into the stock camera app as we demoed in our in-depth article. The Pixel 2-exclusive Visual Core makes the best phone camera even better with improve HDR+ photos. Head to the next page to read more about the best features coming with the Android Oreo update. But first, check out which phones are compatible with the software. When can I download Android Oreo? Oreo has landed on many of the biggest flagship smart phones in the past few months, including the Essential Phone, and several users around the world are currently enjoying the news software on the Samsung Galaxy S8, Samsung Galaxy S8 Plus, Samsung Galaxy Note 8, LG G6, LG V30, Nokia 8 and more. If you own a Google Pixel 2, Google Pixel 2 XL, Google Pixel, Google Pixel XL, Pixel C,

Nexus 6P or Nexus 5X you should already have Oreo, and in fact, you'll be able to update to Android 8.1 now as well. The latter jump to 8.1 is not a big update, but it's set to improve performance on devices with 1GB of RAM or less as well as adding a new Neural Networks API to accelerate on-device machine intelligence. If you're using a Pixel 2 it should also improve the quality of HDR photography. Not seeing your current phone, or the one that's on your wish list? Don't fret just yet, as Google itself has confirmed that the Oreo update will hit many more devices as the year rolls on, as Android P finds its way onto Pixel devices in late 2018. If you don't have one of the above devices the wait for Android Oreo is set to continue. For some phone manufacturers, that could mean a matter of months, while others are much closer. Companies are typically quiet on this topic until there's good news to deliver, but rest assured that we'll be updating this page with the latest. Here are the phones confirmed to get the update.

**ANUPRABHA.B**  
**II BCA B**

### AGILE SOFTWARE DEVELOPMENT

Agile software development describes an approach to software development under which requirements and solutions evolve through the collaborative effort of self-organizing and cross-functional teams and their customer(s)/end user(s). It advocates adaptive planning, evolutionary development, early delivery, and continual improvement, and it encourages rapid and flexible response to change.

The term agile (sometimes written Agile) was popularized, in this context, by the Manifesto for Agile Software Development. The values and principles espoused in this manifesto were derived from and underpin a broad range of software development frameworks, including Scrum and Kanban.

There is significant anecdotal evidence that adopting agile practices and values improves the agility of software professionals, teams and organizations; however, some empirical studies have found no scientific evidence.

### **Iterative, incremental and evolutionary**

Most agile development methods break product development work into small increments that minimize the amount of up-front planning and design. Iterations, or sprints, are short time frames (timeboxes) that typically last from one to four weeks. Each iteration involves a cross-functional team working in all functions: planning, analysis, design, coding, unit testing, and acceptance testing. At the end of the iteration a working product is demonstrated to stakeholders. This minimizes overall risk and allows the product to adapt to changes quickly. An iteration might not add enough functionality to warrant a market release, but the goal is to have an available release (with minimal bugs) at the end of each iteration. Multiple iterations might be required to release a product or new features. Working software is the primary measure of progress.

### **Efficient and face-to-face communication**

No matter which development method is followed, every team should include a customer representative (Product Owner in Scrum). This person is agreed by stakeholders to act on their behalf and makes a personal commitment to being available for developers to answer questions throughout the iteration. At the end of each iteration, stakeholders and the customer representative review progress and re-evaluate priorities with a view to optimizing the return on investment (ROI) and ensuring alignment with customer needs and company goals.

In agile software development, an information radiator is a (normally large) physical display located prominently near the development team, where passers-by can see it. It presents an up-to-date summary of the product development status. A build light indicator may also be used to inform a team about the current status of their product development.

### **Very short feedback loop and adaptation cycle**

A common characteristic in agile software development is the daily stand-up (also known as the daily scrum). In a brief session, team members report to each other what they did the previous day toward their team's iteration goal, what they intend to do today toward the goal, and any roadblocks or impediments they can see to the goal.

### **Quality focus**

Specific tools and techniques, such as continuous integration, automated unit testing, pair programming, test-driven development, design patterns, behavior-driven development, domain-driven design, code refactoring and other techniques are often used to improve quality and enhance product development agility. The idea is that the quality is built into the software and always have demonstrable software for the customers.

### **Philosophy**

Compared to traditional software engineering, agile software development mainly targets complex systems and product development with dynamic, non-deterministic and non-linear characteristics. Accurate estimates, stable plans, and predictions are often hard to get in early stages, and confidence in them is likely to be low. Agile practitioners will seek to reduce the leap-of-faith that is needed before any evidence of value can be obtained. Requirements and design are held to be emergent. Big up-front specifications would probably cause a lot of waste in such cases, i.e., are not economically sound. These basic arguments and previous industry experiences, learned from years of successes and failures, have helped shape agile development's favor of adaptive, iterative and evolutionary development.

**NARMATHA.S**  
**II BCA A**

### **ARTIFICIAL INTELLIGENCE**

Artificial intelligence (AI) is an area of computer science that emphasizes the creation of intelligent machines that work and react like humans. Artificial intelligence is a branch of computer science that aims to create intelligent machines. It has become an essential part of the technology industry. Research associated with artificial intelligence is highly technical and specialized. Knowledge engineering is a core part of AI research. Machines can often act and react like humans only if they have abundant information relating to the world. Artificial intelligence must have access to objects, categories, properties and relations between all of them to implement knowledge engineering. Initiating common sense, reasoning and problem-solving power in machines is a difficult and tedious task.

Machine learning is also a core part of AI. Learning without any kind of supervision requires an ability to identify patterns in streams of inputs, whereas learning with adequate supervision involves classification and numerical regressions. Classification determines the category an object belongs to and regression deals with obtaining a set of numerical input or output examples, thereby discovering functions enabling the generation of suitable



outputs from respective inputs. Mathematical analysis of machine learning algorithms and their performance is a well-defined branch of theoretical computer science often referred to as computational learning theory.

Machine perception deals with the capability to use sensory inputs to deduce the different aspects of the world, while computer vision is the power to analyze visual inputs with a few sub-problems such as facial, object and gesture recognition. Robotics is also a major field related to AI. Robots require intelligence to handle tasks such as object manipulation and navigation, along with sub-problems of localization, motion planning and mapping.

**BUMINEELA S.BII**  
**BCA B**

## **APPLICATIONS OF ARTIFICIAL INTELLIGENCE**

Artificial intelligence, defined as intelligence exhibited by machines, has many applications in today's society. More specifically, it is Weak AI, the form of A.I. where programs are developed to perform specific tasks, that is being utilized for a wide range of activities including medical diagnosis, electronic trading, robot control, and remote sensing. AI has been used to develop and advance numerous fields and industries, including finance, healthcare, education, transportation, and more.

### **Aviation**

The Air Operations Division (AOD) uses AI for the rule based expert systems. The AOD has use for artificial intelligence for surrogate operators for combat and training simulators, mission management aids, support systems for tactical decision making, and post processing of the simulator data into symbolic summaries.

The use of artificial intelligence in simulators is proving to be very useful for the AOD. Airplane simulators are using artificial intelligence in order to process the data taken from simulated flights. Other than simulated flying, there is also simulated aircraft warfare. The computers are able to come up with the best success scenarios in these situations. The computers can also create strategies based on the placement, size, speed and strength of the forces and counter forces. Pilots may be given assistance in the air during combat by computers. The artificial intelligent programs can sort the information and provide the pilot with the best possible maneuvers, not to mention getting rid of certain maneuvers that would be impossible for a human being to perform. Multiple aircraft are needed to get good approximations for some calculations so computer simulated pilots are used to gather data. These computer simulated pilots are also used to train future air traffic controllers.

The system used by the AOD in order to measure performance was the Interactive Fault Diagnosis and Isolation System, or IFDIS. It is a rule based expert system put together by collecting information from TF-30 documents and the expert advice from mechanics that work on the TF-30. This system was designed to be used for the development of the TF-30 for the RAAF F-111C. The performance system was also used to replace specialized workers. The system allowed the regular workers to communicate with the system and avoid mistakes, miscalculations, or having to speak to one of the specialized workers.

The AOD also uses artificial intelligence in speech recognition software. The air traffic controllers are giving directions to the artificial pilots and the AOD wants to the pilots to respond to the ATC's with simple responses. The programs that incorporate the speech software must be trained, which means they use neural networks. The program used, the Verbex 7000, is still a very early program that has plenty of room for improvement. The improvements are imperative because ATCs use very specific dialog and the software needs to be able to communicate correctly and promptly every time.

The Artificial Intelligence supported Design of Aircraft, or AIDA, is used to help designers in the process of creating conceptual designs of aircraft. This program allows the designers to focus more on the design itself and less on the design process. The software also allows the user to focus less on the software tools. The AIDA uses rule based systems to compute its data. This is a diagram of the arrangement of the AIDA modules. Although simple, the program is proving effective.

The Integrated Vehicle Health Management system, also used by NASA, on board an aircraft must process and interpret data taken from the various sensors on the aircraft. The system needs to be able to determine the structural integrity of the aircraft. The system also needs to implement protocols in case of any damage taken the vehicle.

Haitham Baomar and Peter Bentley are leading a team from the University College of London to develop an artificial intelligence based Intelligent Autopilot System (IAS) designed to teach an autopilot system to behave like a highly experienced pilot who is faced with an emergency situation such as severe weather, turbulence, or system failure. Educating the autopilot relies on the concept of supervised machine learning "which treats the young autopilot as a human apprentice going to a flying school". The autopilot records the actions of the human pilot generating learning models using artificial neural networks. The autopilot is then given full control and observed by the pilot as it executes the training exercise.

The Intelligent Autopilot System combines the principles of Apprenticeship Learning and Behavioral Cloning whereby the autopilot observes the low-level actions required to maneuver the airplane and the high-level strategy used to apply those actions. IAS implementation employs three phases; pilot data collection, training, and autonomous control. Baomar and Bentley's goal is to create a more autonomous autopilot to assist pilots in responding to emergency situations.

### Computer science

AI researchers have created many tools to solve the most difficult problems in computer science. Many of their inventions have been adopted by mainstream computer science and are no longer considered a part of AI. (See AI effect.) According to Russell & Norvig (2003, p. 15), all of the following were originally developed in AI laboratories: time sharing, interactive interpreters, graphical user interfaces and the computer mouse, rapid development environments, the linked list data structure, automatic storage management, symbolic programming, functional programming, dynamic programming and object-oriented programming.

AI can be used to create other AI. For example, around November 2017, Google's AutoML project to evolve new neural net topologies created NASNet, a system optimized for ImageNet and COCO. According to Google, NASNet's performance exceeded all previously published ImageNet performance.

### Education

There are a number of companies that create robots to teach subjects to children ranging from biology to computer science, though such tools have not become widespread yet. There have also been a rise of intelligent tutoring systems, or ITS, in higher education. For example, an ITS called SHERLOCK teaches Air Force technicians to diagnose electrical systems problems in aircraft. Another example is DARPA, Defense Advanced Research Projects Agency, which used AI to develop a digital tutor to train its Navy recruits in technical skills in a shorter amount of time. Universities have been slow in adopting AI technologies due to either a lack of funding or skepticism of the effectiveness of these tools, but in the coming years more classrooms will be utilizing technologies such as ITS to complement teachers.

Advancements in natural language processing, combined with machine learning, have also enabled automatic grading of assignments as well as a data-driven understanding of individual students' learning needs. This led to an explosion in popularity of MOOCs, or Massive Open Online Courses, which allows students from around the world to take classes online. Data sets

collected from these large scale online learning systems have also enabled learning analytics, which will be used to improve the quality of learning at scale. Examples of how learning analytics can be used to improve the quality of learning include predicting which students are at risk of failure and analyzing student engagement.

### Human resources and recruiting

Another application of AI is in the human resources and recruiting space. There are three ways AI is being used by human resources and recruiting professionals. AI is used to screen resumes and rank candidates according to their level of qualification. AI is also used to predict candidate success in given roles through job matching platforms. And now, AI is rolling out recruiting chat bots that can automate repetitive communication tasks.

Typically, resume screening involves a recruiter or other HR professional scanning through a database of resumes. Now startups like Pomato, are creating machine learning algorithms to automate resume screening processes. Pomato's resume screening AI focuses on automating validating technical applicants for technical staffing firms. Pomato's AI performs over 200,000 computations on each resume in seconds then designs a custom technical interview based on the mined skills.

From 2016 to 2017, consumer goods company Unilever used artificial intelligence to screen all entry level employees. Unilever's AI used neuroscience based games, recorded interviews, and facial/speech analysis to predict hiring success. Unilever partnered with Pymetrics and HireVue to enable its novel AI based screening and increased their applicants from 15,000 to 30,000 in a single year. Recruiting with AI also produced Unilever's "most diverse class to date." Unilever also decreased time to hire from 4 months to 4 weeks and saved over 50,000 hours of recruiter time.

From resume screening to neuroscience, speech recognition, and facial analysis...it's clear AI is having a massive impact on the human resources field. Yet another development in AI is in recruiting chatbots. TextRecruit, a Bay Area startup, released Ari (automated recruiting interface.) Ari is a recruiting chatbot that is designed to hold two-way text message conversations with candidates. Ari automates posting jobs, advertising openings, screening candidates, scheduling interviews, and nurturing candidate relationships with updates as they progress along the hiring funnel. Ari is currently offered as part of TextRecruit's candidate engagement platform.



## PHOTOS GALLERY



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