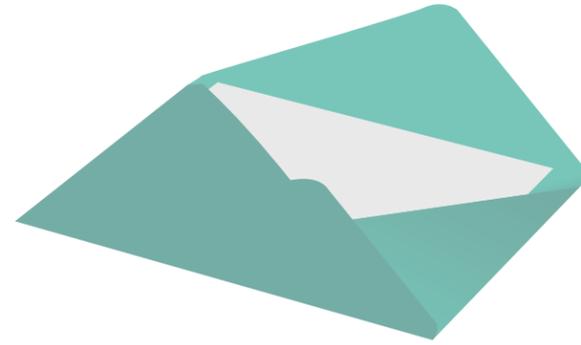


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## The New **Mastercam** 2019



The New Mastercam 2019 is now exciting the engineers and mechanics with its innovative technology and features. The tool has already made simple "designing and modifications" in the virtual parts for these professionals.

Here are some of the latest updates on the tool:

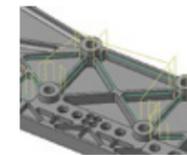
### Deburr Toolpath

Engineering design professionals can now use the new toolpath for Multiaxis. The tool can break the edges for 3 to 5 axis and is capable of removing burrs. It can be used with tools such as the Ball end mill and Lollipop with undercut.



### Chamfer Toolpath

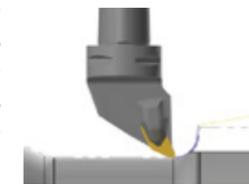
Now also available for the 2D machining, this tool allows the designers to work on the solid edges and faces for chain geometry designs. It also helps to work on surfaces, solids, and meshes used for the avoidance model. The feature also has a set of unique parameters to have more control over the toolpath.



### Prime Turning Toolpath

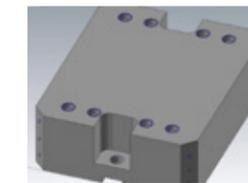
Introduced in the 2018 model, it is now fully integrated into the Mastercam 2019 version.

The feature now enable designers to include radius as small as 0.4 millimeter. The feature also gives access to the additional libraries that can be downloaded from Tech Exchange.



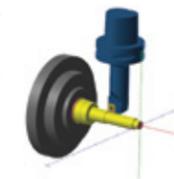
### Solid Hole Function

The new solid hole function can automate cylindrical hole punching mechanism which saves the designer's time consumption in creating circles and extruding them. The feature also gives options to choose the hole types such as Counterbore, Countersink, Counterdrill and Taper.



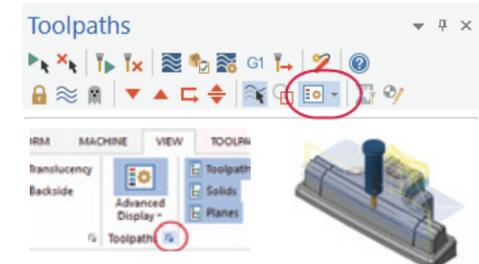
### 3D Tool Support

The new version is now allowing designers to build tools from the 3D STEP models using the new Tool Designer feature. The tool designer here is a function



panel that has tab-style navigation that offers a structured workflow similar to a wizard.

### Advanced Toolpath Display



Mastercam, in the new version can now display toolpaths with different colors. These colors are based on the type of the design move. The designer has an option to toggle the Advanced Display. If the designer chooses not to use it the tool displays only the cutting and rapid motion in different colors. The designer can then change this display state and colors as they wish.

On an overall basis, Mastercam has now made designing and modifications extremely easy for the engineering designers. These professionals can develop more detailed and precise designs using the new Mastercam. The advanced views and simulator in the latest version have made product designs more interactive and efficient.

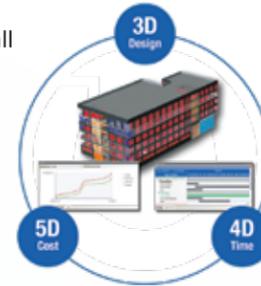
## How 5D BIM Fuels the Growth of Construction Industry?



The Building Information Model (BIM) helps to create, update and manage building designs at any stage of the project. BIM provides a digital representation of the physical and functional characteristics of a project. The tool gained high popularity among the building design professionals as it covers all the information about every component of a building.

The 5D BIM fuels the growth of the construction industry in several ways:

- It delivers superior performance at a low cost.
- The AR/VR technologies in 5D keep a check on the overall construction expenditure.
- The 5D functionalities can integrate the output from the 3D format.
- The tool automatically updates the budget charts as the project changes.
- It reduces the work without loss in efficiency.
- The design changes are directly connected to the cost-estimation software.
- Optimum utilization of resources.



Including the 5D BIM in the construction industry significantly increases the chances of a contractor to win any project. The use of cloud technology provides the luxury to the contractors and help them to consult with their subordinates.



### Future of 5D BIM in Construction Industry

Considering the benefits of the 5D BIM, the IT professionals are now pairing it with the upcoming technologies. It implies that BIM tools are now integrated with cloud computing, mobile phone applications and augmented reality to generate higher profits.

These technologies allows the users to update the projects anytime and from anywhere. The accurate estimation of the projects helps the contractors to present their ideas with assurance and allows them to finish it with high accuracy.



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## ARTIFICIAL INTELLIGENCE LEARNS FROM PATIENT DATA TO REFINE CANCER TREATMENT

Artificial Intelligence (AI) and Machine Learning techniques in healthcare are reaching new heights through research and innovation every day. AI is used currently across all the treatment stages, right from the disease diagnosis, sample analysis, upto their medication and cure. To make further studies, a team of researchers from the MIT(Madras Institute of Technology) focused on the brain cancer treatment. They reduced the deadly chemotherapy and radiotherapy dosage for the glioblastoma patients to obtain test results.

The team uses a research model based on a technique known as the Reinforced Learning (RL). This method was inspired by behavioral psychology in which the model learns by reading the patient's behavior automatically to generate the desired outcome. The adapted RL model which studied the treatment of glioblastoma used a combination of drugs such as Temozolomide (TMZ), Procarbazine, Lomustine, and Vincristine (PVC). For the test, the researchers:

- Took a trial on a set of 50 patients.
- For every patient, the model conducts about 20,000 trial-and-error tests.
- The model, either initiates or withholds a dose for a patient.
- Based on the reaction, it then decides what amount of dosage is sufficient.
- The treatment cycles of the AI model reduced the effects of the disease to a great extent.

The RL model offers a significant improvement over the traditional "eye-balling" method of administering the patient dosage. The model observes how every patient responds towards the medication given to them and adjusts them accordingly to get the desired results. In this way, AI is learning new ways of medication from the patient data.

## DOES DIGITALIZATION AFFECT MANUFACTURING ECONOMICS?

Digitalization has revolutionized the entire manufacturing sector. The labor-intensive industry has transformed into a technology-driven industry. Technology such as 3-D printing, CNC machining, industrial internet of things (IIoT) and artificial intelligence (AI) have optimized the manufacturing operations and have considerably reduced the production and maintenance cost.

The details of this technological impact on manufacturing are listed below:

### ❖ Economically Viable Mass Customization

Digital manufacturing helps to automate front-end engineering associated with customization. Interactive design for manufacturing (DFM-Design for Manufacturing) tools helps to analyze the design components before manufacturing, which significantly reduces manufacturing risks and enhance productivity. Precisely, these tools improve traceability across the manufacturing process making it more flexible and efficient. Concisely, this digitalization decreases the tooling cost and makes customization economically feasible.

### ❖ Improved Product Design and Manufacturing

Additive manufacturing is enabling manufacturing organizations to create new and improved products at a lower price. Under the additive manufacturing, engineers have design freedom and assembly reduction, which permits them to customize the product design according to the needs and demands of the industry and customers. Overall, the digital revolution is enhancing product quality, quantity, and variety.

### ❖ Low Maintenance Cost and Downtime

Machine learning and AI(Artificial Intelligence) could effectively



reduce the maintenance and downtime cost. It is because planned and anticipated maintenance is more efficient compared to maintenance of unplanned problems. So, digital manufacturing helps to anticipate potential risks which eventually reduces the cost incurred due to unexpected events.

### ❖ Generating Revenue by Accelerating Production

Digital Manufacturing automates the process of design analysis, toolpathing and front-end processes. This automation helps in the easy prototyping of product which in turn simplify the supply chain management. With the readily modeled design, manufacturers could enhance the procurement process and subsequently reduce the production time. As a result, the product is launched to the market on time and high revenues are generated benefitting the manufacturing firm.

Overall, with the digitalization of the manufacturing industry, the labor-intensive work has reduced, and the productivity has increased exponentially. Consequently, the profits have escalated the cost of productivity and maintenance have decreased. All in all, the useful technology innovation in the manufacturing sector have benefitted the overall industry and have paved the way for improved production.



## Engineering Education and Job Satisfaction

A couple of years back, a bachelor's degree in engineering was assumed to be enough to achieve success in the career. But, with more competitiveness in the industries, the employers now seek candidates that hold advanced degrees in engineering. These degrees also helps the professional to move into job roles that are more challenging, highly paid and with more responsibilities.

Recent research about degrees and job roles stated that:

- Bachelor's degree was the most common degree across the technical industries.
- Master's degree held the second highest position.
- An exception was seen in the education sector that held a higher number of doctoral degrees.

### Degree Types and Job Roles

Degrees plays a significant role in the employee job responsibilities. A match

between the job roles and education is thus important for success. Therefore, people who wish to succeed in their career opt for advanced degrees in their field. It is often observed that:

- Most of the successful people working in the same field of their education had both a bachelor's and a master's degree.
- These professionals persuaded for a higher level of education to gain a deeper understanding of their fields and advance on their career paths.

### Job Satisfaction

It is one of the most motivating factors to go for an advanced degree.

- Most of the professionals believe that having a masters or a PhD degree helps them excel in their career.
- It helps to gain an improved breadth of knowledge and expertise in their field.
- It gives professionals a higher level of job satisfaction and enjoyment of their tasks.
- Lastly, it offers a high range of salary which gives them a feeling of satisfaction.