

Bionic Design Research Team:

Life evolution is estimated in 3.8 billion years and it is commonly agreed that Nature has evolved objects with high performance with commonly found materials using clever and elegant solutions. Bionic Design in conjunction with Additive Manufacturing is a disruptive technology that shall change the landscape of manufacturing in the world. The adoption of this technology is inevitable as the advantages of this technology are prodigious. Furthermore, nature has always been the quintessence of sustainability.

Our dabbling with bionic structures show that nature from apriori always finds, not minimum, but robust solutions. Nature has best designed structures as far as weight to strength ratio is considered. The beauty of nature's form is derived from effective evolution and robustness of its function. The bionics research group, in CIPD, works in finding out solutions to the overarching inquisitiveness about complex structures found in nature.

To adopt nature's optimal designs (perfected over billions of years), we need to adopt additive manufacturing as these complex structures cannot be manufactured using traditional methods. Weight reduction without compromising on durability shall lead to significant reduction in life-cycle costs for airlines, automobile owners and aerospace companies. Aerospace companies (GE, Airbus, Boeing) are advocates and early adopters of Bionic Designs and Additive Manufacturing (BDAM) for their products

Our research activities shall focus on developing design methodologies which adopt bionic or bio-inspired designs for product development.

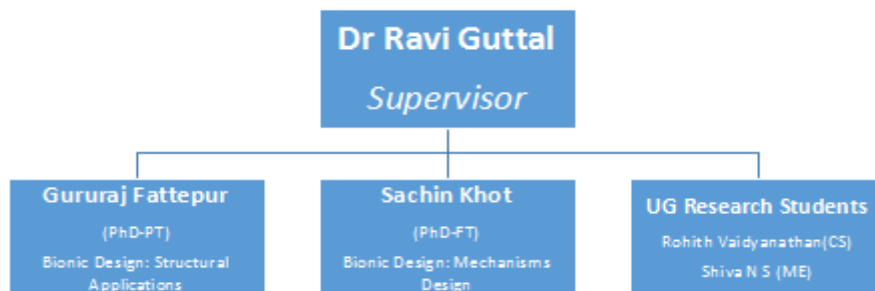


Image 1 Section of a machine part with bionic internal structures.



Image 2 Bullet train inspired by Kingfisher beak.



Image 3 Mercedes-Benz's Boxfish Inspired car.

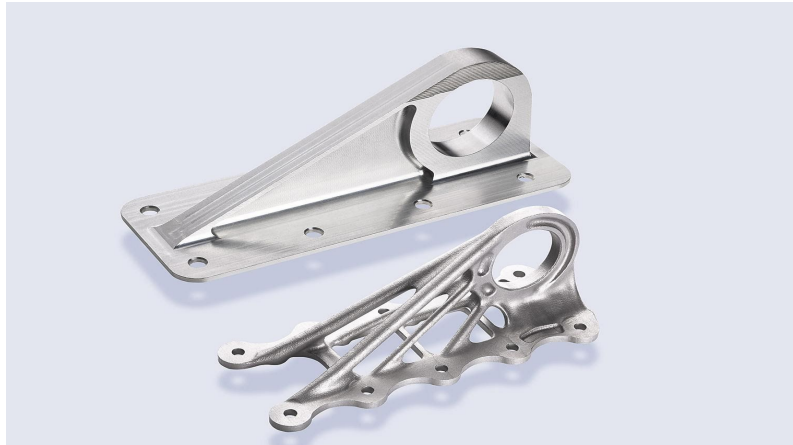


Image 4 Bionic design concept for an aircraft part.



Image 5 Bionic designed concept jewellery.

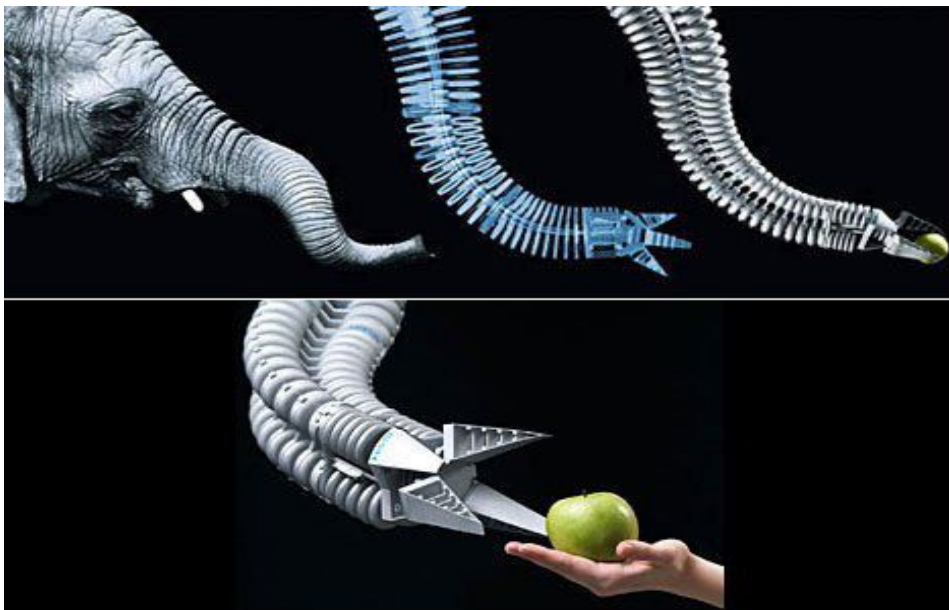


Image 6 German company Festo's elephant trunk inspired robotic arm