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Soft Robotics Transferring Theory To

Engineers at UC Riverside have unveiled an air-powered computer memory that can be used to control soft robots. The innovation overcomes one of the biggest obstacles to advancing soft robotics: the ...

Air-powered computer memory helps soft robot control movements

Researchers create robot that sorts soft plastic Technology could be a boon for recycling industry Engineering researchers are developing a unique method to increase the recycling of soft plastics by ...

AI-Powered Recycling Robot Could Help Solve Plastic Waste Crisis

The material used for these new soft robot arms is a special kind of polymer known as a 'dielectric elastomer'. The Saarbr ü cken researchers are using this composite material to create artificial ...

Soft robots -- smart elastomers are making the robots of the future more touchy-feely

Companies like Amazon spend billions on labor alone in fulfillment centers, which could, in theory, be captured by robots. However, many robotics companies came to realize that it is not as easy ...

The Demise Of Robotics Companies: Learning From Past Mistakes

Engineers from the University of Maryland created an inflatable robot "hand" that can beat the first level of the classic video game Super Mario Brothers. It uses emerging technology known as ...

Engineers create a 3D-printed robotic hand capable of playing Nintendo

The insights gained could lead to more flexible and robust soft electronic materials, such as health monitors and soft robotics ... that had been predicted by theory but never observed experimentally.

Pioneering chemistry approach could lead to more robust soft electronics

and morphable soft-bodied robots. In addition to novel designs and methods for constructing robot morphologies, biology also inspires us to design improved software to enable robots to better ...

Bioinspired robots: Examples and the state of the art

Last, we demonstrate counterintuitive sinusoidal responses by integrating three materials, with interesting applications in sensing and soft robotics. The integration ... strain beyond classical ...

Novel insights into the design of stretchable electrical systems

SoftBank ' s Pepper robot has ceased production and is unlikely ... While resuming production would in theory be possible, " it would be costly " according to the leakers. SoftBank is also ...

SoftBank ' s Pepper robot reportedly gets the chop

Abundant developed a harvesting robot that initially targeted apples. The system combined computer vision and a vacuum end-effector to select and pick ripe fruit, transferring it into a bin.

Abundant Robotics ends fruit harvesting business

It was a robot built for personal interaction rather than work, as those soft tactile hands are better suited to a handshake than holding a tool. It found its way into Softbank stores as well as a ...

Robots Hacks
The School of Engineering has announced that MIT has granted tenure to eight members of its faculty in the departments of Chemical Engineering, Electrical Engineering and Computer Science, Materials ...

Eight faculty members have been granted tenure in five departments across the MIT School of Engineering
The AI Innovation Awards honors companies and individuals who stand out from their peers in solving challenges in creative ways.

VentureBeat presents AI Innovation Awards nominees at Transform 2021
He led Team MIT-Princeton in the Amazon Robotics Challenge ... His research on soft matter is broad and has included accurate measurement of biophysical forces and the self-assembly nano-particles in ...

The tenured engineers of 2021
When investing in stocks, it's important to have a thesis -- a theory about the things that ... you can get your floor cleaning robot, the periodic accessories that need to be replaced like ...

The research areas as well as the knowledge gained for the practical use of robots are growing and expanding beyond manufacturing and industrial automation, making inroads in sectors such as health care and terrain sensing, as well as general assistive systems working in close interaction with humans. In a situation like this, it is necessary for future robot systems to become less stiff and more specialized by taking inspiration from the mechanical compliance and versatility found in natural materials and organisms. At present, a new discipline is emerging in this area, called » Soft Robotics « . It particularly challenges the traditional thinking of engineers, as the confluence of technologies, ranging from new materials, sensors, actuators and production techniques to new design tools, will make it possible to create new systems whose structures are almost completely made of soft materials, which bring about entirely new functions and behaviors, similar in many ways to natural systems. These Proceedings focus on four main topics: · Soft Actuators and Control · Soft Interactions · Soft Robot Assistants: Potential and Challenges · Human-centered » Soft Robotics « .

Popularized by Baymax in the hit movie Big Hero 6, soft robotics is a big, fun field. More than just cloth or silicone robots, soft robotics is all about getting motion out of soft things--paper, silicone, cloth, springs, rubber hoses--all these and more can be combined in different ways to come up with comfortable, friendly, and familiar-feeling solutions to interesting problems. And they can be fun to play with, too. This book is about taking different materials, combining them, and remixing them with 3d printing, laser cutting, mold making, casting, and sewing to create soft robots.

The many intriguing examples on the application of mechatronics reinforce the excitement of this creative field of technology. As a collection they present a stimulating resource to developers of future mechatronics technology, and to educators searching for interesting examples. From structured-light measurement of the build-up of detritus on railway bogies and detection of uncracked spores of Chinese medicine to a practical tractor vision guidance system embedded in a smart-phone application, the practical applications of mechatronics and machine vision abound. Fruits are counted on the tree, pasture biomass is measured and a robot collects camel dung as a resource. 3D printing is in vogue, but papers here discuss the construction and strategy of the printer itself. The measurement and analysis of myoelectric muscle signals enable a prosthesis to be controlled and a feeding robot is used for patient care. An exoskeleton has both soft and rigid links and an optical sensor analyses the tissue into which a surgical needle is being inserted. These are some of the papers in this collection from the 26th annual conference on Mechatronics and Machine Vision in Practice, carefully selected to exclude papers that are merely theoretical and to highlight those that show practical verification. Papers have been contributed from China, New Zealand, the Philippines, Emirates, Germany and of course Australia.

This book presents nearly 90 carefully selected contributions at the 12th International Conference Mechatronics, which took place in Brno, Czech Republic on 6 – 8 September 2017. Reflecting the most progressive and constantly changing areas of mechatronics, these proceedings includes papers concerning modeling and simulation, automatic control, robotics, sensors and actuators, electrical machines, and energy harvesting. It not only offers inspiration, but also deepens readers ' interdisciplinary and integrated understanding of modern engineering. The book is intended for experts in the integration of electronic, mechanical, control and computer sciences.

This book offers a comprehensive, timely snapshot of current research, technologies and applications of soft robotics. The different chapters, written by international experts across multiple fields of soft robotics, cover innovative systems and technologies for soft robot legged locomotion, soft robot manipulation, underwater soft robotics, biomimetic soft robotic platforms, plant-inspired soft robots, flying soft robots, soft robotics in surgery, as well as methods for their modeling and control. Based on the results of the second edition of the Soft Robotics Week, held on April 25 – 30, 2016, in Livorno, Italy, the book reports on the major research lines and novel technologies presented and discussed during the event.

Intelligence results from the interaction of the brain, body and environment. The question addressed in this book is, can we measure the contribution of the body and its' interaction with the environment? To answer this, we first present a comprehensive overview of the various ways in which a body reduces the amount of computation that the brain has to perform to solve a task. This chapter will broaden your understanding of how important inconspicuously appearing physical processes and physical properties of the body are with respect to our cognitive abilities. This form of contribution to intelligence is called Morphological Intelligence. The main contribution of this book to the field is a detailed discussion of how Morphological Intelligence can be measured from observations alone. The required mathematical framework is provided so that readers unfamiliar with information theory will be able to understand and apply the measures. Case studies from biomechanics and soft robotics illustrate how the presented quantifications can, for example, be used to measure the contribution of muscle physics to jumping and optimise the shape of a soft robotic hand. To summarise, this monograph presents various examples of how the physical properties of the body and the body ' s interaction with the environment contribute to intelligence. Furthermore, it treats theoretical and practical aspects of Morphological Intelligence and demonstrates the value in two case studies.

This book focuses on the design, development, and characterization of a compact magnetic laser scanner for microsurgical applications. In addition, it proposes a laser incision depth controller to be used in soft tissue microsurgeries. The use of laser scanners in soft tissue microsurgery results in high quality ablations with minimal thermal damage to surrounding tissue. However, current scanner technologies for microsurgery are limited to free-beam lasers, which require direct line-of-sight to the surgical site, from outside the patient. Developing compact laser micromanipulation systems is crucial to introducing laser-scanning capabilities in hard-to-reach surgical sites, e.g., vocal cords. In this book, the design and fabrication of a magnetically actuated endoscopic laser scanner have been shown, one that introduces high-speed laser scanning for high quality, non-contact tissue ablations in narrow workspaces. Static and dynamic characterization of the system, its teleoperation through a tablet device, and its control modelling for automated trajectory executions have been shown using a fabricated and assembled prototype. Following this, the book discusses how the laser position and velocity control capabilities of the scanner can be used to design a laser incision depth controller to assist surgeons during operations.

This book shows the advantages of using different perspectives and scientific backgrounds for developing support technologies that are integrated into daily life. It highlights the interaction between people and technology as a key factor for achieving this integration and discusses relevant methods, concepts, technologies, and applications suitable for interdisciplinary exchange and collaboration. The relationship between humans and technology has become much more inclusive and interdependent. This generates a number of technical, ethical, social, and practical issues. By gathering contributions from scholars from heterogeneous research fields, such as biomechanics, various branches of engineering, the social sciences, information science, psychology, and philosophy, this book is intended to provide answers to the main questions arising when support technologies such as assistance systems, wearable devices, augmented reality, and/or robot-based systems are constructed, implemented, interfaced and/or evaluated across different application contexts.

The E-Medicine, E-Health, M-Health, Telemedicine, and Telehealth Handbook provides extensive coverage of modern telecommunication in the medical industry, from sensors on and within the body to electronic medical records and beyond. Telehealth and Mobile Health is the second volume of this handbook. Featuring chapters written by leading experts and researchers in their respective fields, this volume: Discusses telesurgery, medical robotics, and image guidance as well as telenursing and remote patient care Describes the implementation of networks, data management, record management, and effective personnel training Explains how the use of new technologies brings many business, management, and service opportunities Provides examples of scientific advancements such as brain-controlled bionic human arms and hands Incorporates clinical applications throughout for practical reference The E-Medicine, E-Health, M-Health, Telemedicine, and Telehealth Handbook bridges the gap between scientists, engineers, and medical professionals by creating synergy in the related fields of biomedical engineering, information and communication technology, business, and healthcare.