The Need For Speed: The Potential Of Additive Manufacturing Is Enormous, And Materializing Now
“The new additive process made it possible to redesign the perforations as complex tunnels that route the air through the metal to spots engineers had trouble reaching, and opens up a new world of performance and efficiency gains.”
Source: GE Reports

How Additive Manufacturing Can Compete in Full-Scale Factory Production
“At the recent ribbon-cutting for a new tech center at HP Barcelona, the printing giant explained its plan for accelerating additive manufacturing adoption in manufacturing.”
Source: engineering.com

Stratasys and Boom Supersonic Partnership Brings 3-D Printing To Faster-Than-Sound Airliners
“For Boom Supersonic (read more background on them here), it meant partnering with Stratasys Ltd. to bring the latest in additive manufacturing to their development and production efforts.”
Source: Forbes

Data fusion and machine learning for industrial prognosis: Trends and perspectives towards Industry 4.0
“This paper provides a comprehensive survey of the recent developments in data fusion and machine learning for industrial prognosis, placing an emphasis on the identification of research trends, niches of opportunity and unexplored challenges. To this end, a principled categorization of the utilized feature extraction techniques and machine learning methods will be provided on the basis of its intended purpose ...”
Source: Information Fusion

Smart manufacturing systems: state of the art and future trends
“In order to have a comprehensive understanding of smart manufacturing systems (SMSs), this paper summarized the evolution, definition, objectives, functional

Renishaw Reports Preliminary Financial Results For 2019, Experiences Strong Growth In Additive Manufacturing
“British engineering firm and metal 3D printer manufacturer Renishaw has reported its preliminary financial results for fiscal 2019. Headline revenue has been reported at £574 million, 6 percent less, or 7 percent less at constant exchange rates, than the total for FY2018 which was £611.5 million. Renishaw’s full
INTERVIEW: GANTRI INTEGRATES PROPRIETARY QUAD EXTRUSION 3D PRINTER TO TABLE LAMP PRODUCTION

"Gantri, a California-based light manufacturer, has unveiled its own 3D printer named Dancer. Using a patent-pending process based on an FDM multi-gantry system, the Dancer is designed for the production of the company's light fittings."

Source: 3D Printing Industry

INDUSTRY 4.0

Henrik von Scheel: In conversation with the ‘Father of Industry 4.0’

"Success may have many parents, but Industry 4.0 has only one: Henrik von Scheel. He talks to The Manufacturer about where manufacturing is heading – and why UK industry has a long-term competitive advantage."

Source: The Manufacturer

Data-driven smart production line and its common factors

"Due to the wide usage of digital devices and easy access to the edge items in manufacturing industry, massive industrial data is generated and collected. A data-driven smart production line (SPL), which is a basic cell in a smart factory, is derived primarily. This paper studies the data-driven SPL and its common factors."

Source: The International Journal of Advanced Manufacturing Technology

An overall framework and subsystems for smart manufacturing integrated system (SMIS) from multi-layers based on multi-perspectives

"In the tide of smart manufacturing in the world, many countries have put forward their own reference frameworks for smart manufacturing system. Based on the framework of smart manufacturing system (SMS) proposed by China, a reference smart manufacturing integration system (SMIS) from multi-level and multi-perspective was proposed."

Source: The International Journal of Advanced Manufacturing Technology

SMART FACTORIES

Orchestrating 5G Network Slices to Support Industrial Internet and to Shape Next-Generation Smart Factories

"5G systems can play a key role in enabling Industry 4.0 by extending the network slicing paradigm to specifically support the requirements of industrial use cases over heterogeneous domains. We present a novel 5G-based network slicing framework that aims at accommodating the requirements of Industry 4.0."

Source: EEE Network

Security of controlled manufacturing systems in the connected factory: the case of industrial robots

"In this paper, we take a holistic view of requirements, business requirements, technical requirements, and components of SMSs. At the same time, it points out the current development status and level."

Source: The International Journal of Advanced Manufacturing Technology

financial results for FY2019 can be accessed here."

Source: 3D Printing Industry
of the security issues (and challenges) that arise in designing and securely deploying controlled manufacturing systems, using industrial robots as a case study—indeed, robots are the most representative instance of a complex automatically controlled industrial device.”
Source: Journal of Computer Virology and Hacking Techniques

Multi-objective resource allocation for Edge Cloud based robotic workflow in smart factory

“In this paper, we address simultaneous optimization of makespan, energy consumption and cost while allocating resources for the tasks of a robotic workflow ... We design an Edge Cloud based multi-robot system to overcome the limitations of remote Cloud based system in exchanging delay sensitive data.”
Source: Future Generation Computer Systems

MANUFACTURING SYSTEMS

An Iterated Min–Max procedure for practical workload balancing on non-identical parallel machines in manufacturing systems

“This paper presents an original approach for a practical workload balancing problem on non-identical parallel machines in manufacturing systems.”
Source: European Journal of Operational Research

The value of regulating returns for enhancing the dynamic behaviour of hybrid manufacturing-remanufacturing systems

“By considering imperfect correlation, we observe that intrinsic variations of returns may dramatically deteriorate the operational performance of these closed-loop supply chains. To cope with such added complexity, we propose a structure for controlling the reverse flow through the recoverable stock. The developed mechanism, in the form of a prefilter, is designed to leverage the known positive consequences of the deterministic component of the returns and to buffer the harmful impact of their stochastic component.”
Source: European Journal of Operational Research
An advanced IoT system for assisting ubiquitous manufacturing with 3D printing

“An advanced Internet-of-things (IoT) system for assisting ubiquitous manufacturing with three-dimensional (3D) printing was designed. The system receives orders from customers on the move online and then distributes the required pieces to nearby 3D printing facilities. After the printing is completed, a freight truck visits the printing facilities sequentially to collect the printed pieces.”

Source: The International Journal of Advanced Manufacturing Technology

IoT anomaly detection method in intelligent manufacturing industry based on trusted evaluation

“Aiming at the security problems existing in the current intelligent manufacturing industrial Internet of Things, this paper proposes a credible overall architecture of the IoT industrial control system. By adding a trusted function module, the credibility level is evaluated and abnormal operations are monitored. The sensing environment for the Internet of Things is more complicated. This paper proposes a cluster-based routing method…”

Source: The International Journal of Advanced Manufacturing Technology

Towards socially enabled internet of industrial things: Architecture, semantic model and relationship management

“This paper examines the major opportunities emerging from the introduction of novel concept of Social Internet of Things (SIoT) into manufacturing industry along with proposing reference architecture for the same. The proposed architecture is explored from a semantic point of view and an ontological model is designed.”

Source: Ad Hoc Networks
Interface model-based configuration design of mechatronic systems for industrial manufacturing applications
“The paper proposes a configuration design method for mechatronic systems in the context of industrial manufacturing. The effectiveness and applicability of the proposed configuration design method is demonstrated with a robotic welding system.”
Source: Robotics and Computer-Integrated Manufacturing

Robot assisted additive manufacturing: A review
“The additive manufacturing and the robotic applications are tremendously increasing in the manufacturing field. This review paper discusses the concept of robotic-assisted additive manufacturing.”
Source: Robotics and Computer-Integrated Manufacturing

Increasing stability in robotic GTA-based additive manufacturing through optical measurement and feedback control
“In this work, a visual sensor, comprising a camera and composite filters, is developed for automatically real-time sensing of the fabrication process. The aim is to keep stable manufacture, and the deviations of the deposited height are compensated by designing an integral separation PID controller to adjust the wire feed speed in the next layer.”
Source: Robotics and Computer-Integrated Manufacturing

Deposition height detection and feature point extraction in robotic GTA-based additive manufacturing using passive vision sensing
“Automatic detection of deposition height is one of the key technologies for metal components fabricated in robotic gas tungsten arc (GTA) based additive manufacturing. In this research, the deposition height, defined as the tungsten tip to the top layer distance, is monitored by a passive vision sensor consisting of a camera and optical filters…”
Source: Robotics and Computer-Integrated Manufacturing

Energy conscious scheduling of a material handling robot in a manufacturing cell
“In a typical robot move cycle, robot move times constitute a significant
portion of the cycle time. During handling operations, robots consume significant amount of energy, which is determined by their speed, load and the distance they travel. In this paper, we propose considering robot speed decisions along with robot move sequencing decisions in a robotic cell scheduling problem.”
Source: Robotics and Computer-Integrated Manufacturing

Multi-users online recognition of technical gestures for natural human-robot collaboration in manufacturing

“The approach we propose to achieve this goal is to use online recognition of technical gestures. In this paper, we present together, and analyze, parameterize and evaluate much more thoroughly, three findings previously unveiled separately by us in several conference presentations …”
Source: Autonomous Robots