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สาขาวิทยาศาสตร์และเทคโนโลยี

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Title:	A Distributed Real-Time Java-Centric Architecture for Industrial Systems
Author:	Basanta-Val, P. ; Garcia-Valls, M.
Journal:	IEEE transactions on industrial informatics, Volume:10 Issue:1, Feb. 2014, pp 27 - 34
Abstract:	There is a trend in industrial systems towards the use of common-off-the-shelf (COTS) components to develop applications that interact with open systems. This trend includes among others the use of high-level languages, such as Java, and Internet protocols (HTTP and Web Services). Although many industrial systems use these technologies at their business layers, they are far from offering a homogeneous programming platform in their most internal infrastructures. This paper extends the current practice by introducing a real-time Java-centric architecture for industrial systems. The architecture integrates existing and upcoming technology to define a Java-based approach. The empirical evidence, included in the paper, illustrates the performance of the core of the industrial layer of this architecture.
Database:	IEEE/IET Electronic Library (IEL)

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Title:	Data Cleaning for RFID and WSN Integration
Author:	Li Wang ; Li Da Xu ; Zhuming Bi ; Yingcheng Xu
Journal:	IEEE transactions on industrial informatics, Volume:10 Issue:1, Feb. 2014, pp 408 - 418
Abstract:	Today's manufacturing environments are very dynamic and turbulent. Traditional enterprise information systems (EISs) have mostly been implemented upon hierarchical architectures, which are inflexible to adapt changes and uncertainties promptly. Next-generation EISs must be agile and adaptable to accommodate changes without significant time delays. It is essential for an EIS to obtain real-time data from the distributed and dynamic manufacturing environment for decision making. Wireless sensor networks (WSNs) and radio-frequency identification (RFID) systems provide an excellent infrastructure for data acquisition, distribution, and processing. In this paper, some key challenges related to the integration of WSN and RFID technologies are discussed. A five-layer system architecture has been proposed to achieve synergistic performance. For the integration of WSN and RFID, one of the critical issues is the low efficiency of communication due to redundant data as redundant data increases energy consumption and causes time delay. To address it, an improved data cleaning algorithm has been proposed; its feasibility and effectiveness have been verified via simulation and a comparison with a published algorithm. To illustrate the capacity of the developed architecture and new data cleaning algorithm, their application in relief supplies storage management has been discussed.
Database:	IEEE/IET Electronic Library (IEL)

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Title:	A New Algorithm for Small-Signal Analysis of DC–DC Converters
Author:	Mandal, K. ; Banerjee, S. ; Chakraborty, C.
Journal:	IEEE transactions on industrial informatics, Volume:10 Issue:1, Feb. 2014, pp 628 - 636
Abstract:	This paper presents a new approach for small-signal analysis of all types of dc-dc converters with any number of topological modes within a switching cycle. So far, sampled-data modeling and sensitivity analysis are mostly used for such a purpose. In both cases, the switching conditions implicitly appear in the small-signal matrices which increases the complexity of the computation for the system with a larger number of topological modes. Here, we propose an alternative approach based on Filippov's method, which studies the effects of each switching separately. It uses a shooting method with an event detector to locate a periodic steady-state, and, when the Newton-Raphson search process of the shooting method converges, it also gives the Jacobian matrix. The algorithm can be easily implemented in a software program as an analytical tool which is expected to be useful for fast and accurate frequency-domain analysis (by small-signal transfer functions) to facilitate controller design. Moreover, since it uses the Filippov's method, this algorithm can also predict the slow- and fast-timescale instabilities.
Database:	IEEE/IET Electronic Library (IEL)

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Title:	Success factors of university-spin-offs: Regional government support programs versus regional environment
Author:	Rolf Sternberg
Journal:	Technovation, Volume 34, Issue 3, March 2014, Pages 137–148
Abstract:	In recent years entrepreneurship research has increasingly interpreted new firm emergence in the light of the context the potential or real founder is living and working in. This is especially true for university spin-offs, a type of new firms that gives rise to great hopes for policymakers and technology transfer institutions. The aim of this paper is to analyze what is more influential: specific characteristics of the regional environment of the spin-off founder or public programs to support university spin-offs. Based upon a unique data set covering 11 years of data collection we were able to apply a control group approach with two different government support programs in two regional contexts. The results based upon ordinal regressions suggest that the regional context in which an individual starts a firm, has an impact on start-up success, but the fact that he/she had received government support has a lesser impact. To summarize: site specific factors matter, government support programs per se do not.
Database:	ScienceDirect

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Title:	Diffusion of multi-generational high-technology products
Author:	Xiaohui Shi, Kiran Fernandes, Pattarin Chumnumpan
Journal:	Technovation, Volume 34, Issue 3, March 2014, Pages 162–176
Abstract:	Previous multi-generational product diffusion (MGPD) models were developed based on the diffusion patterns at that time, but may not be adopted in today's cases. By incorporating the effect of customers' forward-looking behaviour, this paper offers a parsimonious and original model that captures the dynamics of MGPD in current high-technology markets. We empirically examine the feasibility of using previous MGPD models and our suggested model to explain the market growth of new products from high-technology industries. The results show that the new model exhibits better curve fitting and forecasting performance than the prior MGPD models in the cases of this study. For marketing researchers, our model and its results suggest customers' forward looking behaviour is perhaps one of the key sales affecting factors that are missing in previous MGPD models in explaining nowadays' cases. For marketing practitioners, this study offers a valuable tool for marketing strategies in high-tech industries.
Database:	ScienceDirect

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Title:	Epigenetic Economic Dynamics: The evolution of big internet business ecosystems, evidence for patents
Author:	Mikel Gómez-Uranga, Juan Carlos Miguel, Jon Mikel Zabala-Iturriagagoitia
Journal:	Technovation, Volume 34, Issue 3, March 2014, Pages 177–189
Abstract:	The aim of this article is to contribute to literature with new findings from biogenetics that are becoming increasingly important. In particular, we will discuss the new analytic frameworks that may open as a result of the incorporation of epigenetics in evolutionary economic thinking. This new approach is illustrated by studying the evolution of big Internet industry groups such as Apple, Google, Microsoft, Facebook, Amazon and Samsung. With it we shed light on the dynamics of business groups, which we approach as ‘business ecosystems’. We introduce the concept of Epigenetic Economic Dynamics, which is defined as the study of the epigenetic dynamics generated as a result of the adaptation of organisations to major changes in their respective environments. First of all, this concept enables us to understand how the dynamics of the business groups mentioned address changes in their environments. Secondly, it is also useful when analysing the results of these dynamics. Abnormalities, malfunctions or obstacles to innovation, and/or blockage to developing competition at certain levels (i.e. intellectual property rights, abuse of monopoly power, etc.) may arise as a result of the influence of epigenetic dynamics. Acquisition of patent portfolios and patent lawsuits for infringements and violations are quite common, for example in the field of

	mobile telephony, which clearly shows the fierce competition between business groups. Essential patents licensing is particularly at the core of legal disputes between the business groups.
Database:	ScienceDirect

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Title:	CAD model based virtual assembly simulation, planning and training
Author:	Ming C. Leu, Hoda A. ElMaraghy, Andrew Y.C. Nee, Soh Khim Ong, Michele Lanzetta, Matthias Putz, Wenjuan Zhu, Alain Bernard
Journal:	CIRP Annals - Manufacturing Technology, Volume 62, Issue 2, 2013, Pages 799–822
Abstract:	This paper reviews the state-of-the-art methodologies for developing computer-aided design (CAD) model based systems for assembly simulation, planning and training. Methods for CAD model generation from digital data acquisition, motion capture, assembly modeling, human–computer interface, and data exchange between a CAD system and a VR/AR system are described. Also presented is an integrated methodology for designing, planning, evaluating and testing assembly systems. The paper further describes the implementation of these methods and provides application examples of CAD model based simulation for virtual assembly prototyping, planning and training. Finally, the technology gaps and future research and development needs are discussed.
Database:	ScienceDirect

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Title:	Open-architecture products
Author:	Y. Koren, S.J. Hu, Peihua Gu, M. Shpitalni
Journal:	CIRP Annals - Manufacturing Technology, Volume 62, Issue 2, 2013, Pages 719–729
Abstract:	This paper defines open-architecture products (OAPs), a new class of products comprising a fixed platform and modules that can be added and swapped. Customers can adapt OAPs to their needs by integrating modules into the platform. Manufacturers will produce these platforms, while new small companies and customers will develop the modules, thus increasing employment and causing the economy to flourish. At the same time OAPs will provide consumers with the product they desire. Challenges include developing new OAP design software for non-professional designers and new assembly systems to facilitate economical assembly of a large number of product variants.
Database:	ScienceDirect

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Title:	Biorenewable fuels at the intersection of product and process flexibility: A novel modeling approach and application
Author:	David Correll, Yoshinori Suzuki, Bobby Martens
Journal:	International Journal of Production Economics, Volume 150, April 2014, Pages 1–8

Abstract:	In recent years, governments, industry and academia have all invested increasing amounts of time, effort and resources into the production of biorenewable fuels. This interest owes, among other reasons, to our planet's growing demand for energy, depletion of fossil fuel resources and the negative effect of drilling for and burning fossil fuels on the health of our eco-systems and atmospheric chemistry. However, research suggests that biorenewable fuels have the potential to cause environmental and social calamities of their own—especially when produced in the same ways and at the expense of conventional food production. This paper proposes novel supply chains and land use plans for advanced biorenewable fuels which are measured for cost and environmental impact. A two-stage Stackelberg leader-follower mathematical optimization model is proposed. The model uses a series of integrated and sequenced linear programs to optimize the benefits of leveraging biodiversity for the production of advanced biorenewable fuels. Numerical experiments with our model show statistically significant cost, land use and environmental improvements on the order of 10% to 25%. Because the model captures two types of flexibilities (product and process) interfacing across firms, implications are drawn for production systems in other industries where distinct flexibilities meet and environmental impacts are critical.
Database:	ScienceDirect

10	Title:	Carbon footprint inventory route planning and selection of hot spot suppliers
	Author:	Tsai Chi Kuo, Gary Yu-Hsin Chen, Miao Ling Wang, Ming Way Ho
	Journal:	International Journal of Production Economics, Volume 150, April 2014, Pages 125–139
	Abstract:	In order to achieve the data accuracy on carbon emission from the suppliers, a complete carbon footprint inventory must be compiled at each supplier's site. Generally speaking, to collect the carbon emission inventory, data from various sources must be obtained, resulting in consumption of many resources from enterprises and suppliers. Therefore, to perform the compilation efficiently, a more systematic method for visiting suppliers is required. The carbon footprint inventory routing problem, based the vehicle routing problem (VRP), explores the selection of appropriate suppliers for inventory compilation after the carbon emission reaches a certain accuracy level and determination of the efficient carbon emission inventory route. In this study, the VRP is modified for the selection of the suppliers. Furthermore, by applying the sensitivity analysis, this study discusses the replacement of primary data by secondary data and development of the decision method that can be used to evaluate the route optimization, efficiency maximization, and cost minimization for carbon footprint inventory routing planning.
	Database:	ScienceDirect