

# Discovery

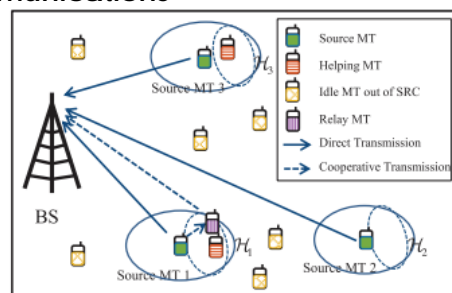
We SHARE to inspire and ignite ideas for  
Engineering Systems & Design (ESD) Pillar!

The titles featured here are to give you a peek into the wealth of resources we have. We hope, through this will encourage you to explore and read further. Share with us topics of importance to ESD and we can introduce relevant titles from some [400,000 eBooks](#) we carry.

March 2016

## PUBLICATIONS BY ESD FACULTY

### Optimal Pricing and Load Sharing for Energy Saving With Cooperative Communications

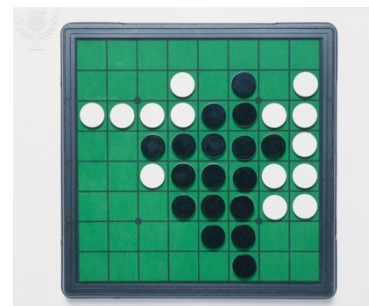


By Lingjie Duan, ESD Assistant Professor

A huge increase in wireless data traffic has led to an increase in energy consumptions in mobile terminals (MTs) such as smartphones. Reducing the energy consumption has been the utmost consumption without compromising the wireless network consumption. The authors have suggested "a pricing mechanism to incentivize the uplink cooperative communications for the energy saving of MTs.

Source: [IEEE Transactions On Wireless Communications](#) (February 2016)

### Convergence Of Best-Response Dynamics In Extensive-Form Games



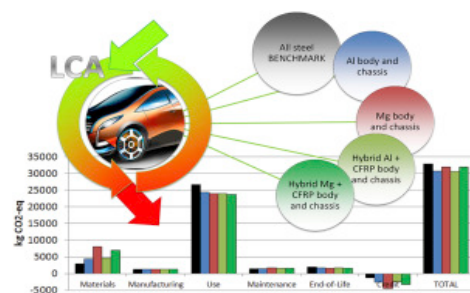
By Xu Zibo, ESD Assistant Professor

By putting together a collection of convergence results on best-response dynamics in extensive-form games such as chess and Reversi, this research aims to prove that every solution flightpath to the continuous-time best-response dynamic converges to a Nash equilibrium component.

Source: [Journal of Economic Theory](#) (March 2016)

## LIFE CYCLE ASSESSMENT

### A Coherent Life Cycle Assessment Of A Range Of Lightweighting Strategies For Compact Vehicles



A LCA-based comparison of a range of lightweight options for compact passenger vehicles is presented in this article. The advanced lightweight materials include aluminium, magnesium and carbon fibre composites. The comparison considers all life cycle stages, together with various end-of-life scenarios.

Source: [Journal of Cleaner Production](#) (December 2015)

### Life Cycle Assessment For The Green Procurement Of Roads: A Way Forward

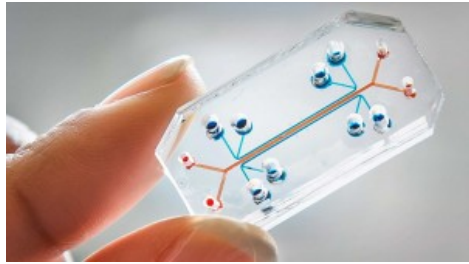


Life cycle assessment (LCA) methodology can assess the environmental impacts of a road system over its life time. For the LCA to be useful for the decision support in a procurement situation, it is important to have a clear understanding of the technical features of the life cycle phases. The authors present different types of decision situations based on the level of complexity and the stage of the planning process the decision is to be made.

Source: [Journal of Cleaner Production](#) (March 2015)

## OPTIMIZATION

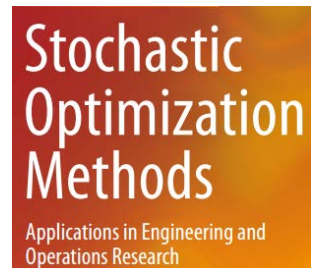
### Microfluidic chip designs process optimization and dimensional quality control



Current technologies like UV lithography, nano-imprint lithography and electron beam lithography can produce nanoscale features with low cost. The authors analysed the production of lab-on-a-chip devices through injection molding. Injection molding process parameters, feature dimensions and orientation relative to polymer flow direction were also examined. Finally the authors discuss the final product's compliance with technical specifications.

Source: [Microsystem Technologies](#) (March 2015)

### Stochastic Optimization Methods

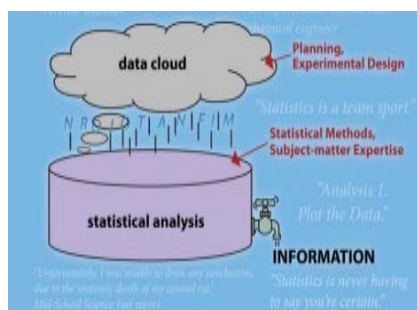


This e-book covers various aspects of stochastic optimization. It provides examples that include methods of stochastic optimization, optimal control under stochastic uncertainty, open-loop feedback control and structural optimization.

Source: [Springer](#) (2015)

## STATISTICS APPLICATION

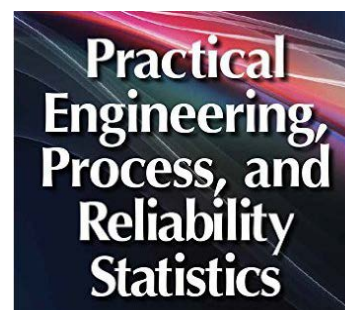
### Fundamentals of Statistical Experimental Design and Analysis



Professionals in all areas benefit from using statistical experimental design to improve the products, processes, and programs they are responsible for. This book has various examples placed in a business or scientific context to emphasize the issues and ideas that led to the experiments and the steps following them.

Source: [Safari Tech](#) (2015)

### Practical Engineering, Process, and Reliability Statistics



This book discusses statistics in the context of engineering. It provides a variety of applications of various concepts, including but not limited to, correlation, regression, hypothesis testing, ANOVA and probability distributions.

Source: [Knovel](#) (2015)