1. Influence of Flavors on the Sharing of Electronic Cigarette Related Information: A Social Media Study

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2. Model Predictive Control for The Flow Field in an Intermittent Transonic Wind Tunnel

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1. Abstract

Modeling the influence of e-cigarette flavors on information sharing could provide quantitative policy decision support concerning smoking initiation and contagion, and e-cigarettes regulations. This study aims to characterize the influence of flavors on the e-cigarette related information sharing on social media. We collected a comprehensive dataset of e-cigarette related discussions from public pages on Facebook. 11 categories of flavors were identified based on commonly used categorization. We evaluated a set of regression models and chose the hurdle negative binomial model to characterize the influence of different flavors and non-flavor control variables on e-cigarette related
information sharing. Five favors (sweet, dessert&bakery, fruits, herbs&spices and tobacco) had significantly negative influences on e-cigarette related information sharing, indicating the users’ tendency not to share the posts related to these flavors. We did not find positive significance of any flavors, which is contradictory to previous research. Certain flavors could even reduce the popularity of information, indicating users’ lack of interest in flavors. Promoting e-cigarette related information with flavors is not an effective marketing approach. This study implies the potential concern of users about flavorings, and suggests a need for proper regulations of the use of flavorings in e-cigarettes.

1. About the Speaker

ZHOU Jiaqi received both the bachelor degree and the master degree from Harbin Institute of Technology, China, in 2013 and 2015, respectively. He is currently a Ph.D. candidate in the Department of Systems Engineering and Engineering Management at the City University of Hong Kong. His research fields include machine learning and data mining in medical informatics applications.

2. Abstract

To accurately test aircraft models, the flow field featured by the stagnation pressure and the Mach number must be kept constant at the predefined state during wind tunnel tests. This study aims to design a controller to quickly reject various disturbances for the varying Angle of Attack (AoA) tests in an Intermittent Transonic Wind Tunnel (ITWT). First, the flow field control system structure is specially designed to simplify the controller design. Next, the control-oriented model is developed for the flow field. In particular, a novel AoA model (i.e., Hammerstein model) with corresponding modeling approach is proposed to characterize the influence of varying AoA on the static pressure. Finally, the flow field controller is formed as a simple Quadratic Programming (QP) problem, where the feedforward strategy is employed to compensate for the varying AoA disturbance. Simulation results and practical tests prove that the proposed controller can improve test precision and reduce test costs.

2. About the Speaker

ZHANG Jian received the B.S. degree in automation and the M.S. degree in control theory and control engineering from Northeastern University, Shenyang, China, in 2013 and 2015, respectively. He is currently a Ph.D. candidate in the
Department of System Engineering and Engineering Management at the City University of Hong Kong. His research interests include nonlinear system identification, nonlinear model predictive control and flow field control in large-scale wind tunnels.

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All are Welcome!

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