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## Shining Bright: The Golden Era of Signal Processing

**T**hree years ago, I wrote my inaugural editorial, “Embracing a New Golden Age of Signal Processing,” [1] for our *IEEE Signal Processing Magazine (SPM)*. Today, while writing this farewell editorial and in representing our entire *SPM* editorial team, I can proudly say the golden era has not only arrived for us to embrace and celebrate, but it is also shining bright and is here to stay.

My service for *SPM* started in 2004, when Prof. Ray Liu, then editor-in-chief, invited me to be the lead guest editor for a special issue. Since then, *SPM* has been a main focus of my service to IEEE

Signal Processing Society (SPS) and to the SP community. When working as an editorial board member and area editor under the leadership of my predecessor, Prof. Shih-Fu Chang, I witnessed the immeasurable vibrancy, invigorating energy, and unbounded intellectual landscape of our SP community. During 2007–2008, with Prof. Chang’s guidance, I initiated the effort in expanding the scope and technical fields of SP [2]. This led to substantial broadening of the article coverage in *SPM* along the two axes of “signal” and “processing” [3]. In the meantime, while helping Prof. Chang to solicit potential articles for *SPM*, I interacted with several pioneers in various technical areas pertinent to SP. These interactions provided me with the opportunity to learn, analyze, and appreciate a

wide range of SP-enabled future wants and needs (e.g., [4]). In my own work environment within a major computer software company, SP methods and applications as defined in the expanded scope had also permeated every corner. Our community had clearly come to realize that while SP played an integral part in the technological development of television, telephone, communication, multimedia, space travel, and computers, more exciting challenges and opportunities would lie ahead for SP in broad areas such as intelligent communication; natural human-machine interface; universal language translation; biomolecular information processing; automated navigation; efficient generation/distribution/consumption of “green” energy; intelligent sensor and human

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networks; global financial market analysis; and much more [4], [5]. All these, together with the numerous SP-empowered technological advancements—e.g., mobile devices becoming ubiquitous, multicore and cloud computing going mainstream, Web search turning intelligent—already brewing in the midst of economic recession three years ago, heralded a new tech boom and a bright era ahead in our field of SP.

Indeed, during the past three years, we have witnessed tremendous growth in signal processing at the global scale. I was honored to lead an energetic, diligent, creative, and productive editorial team to embrace the vitality of our SP community in this golden age. The magazine served not only as an educational tool but also as a catalyst in advancing SP technology. Our articles exemplified and embodied technical rigor and new trends of SP as well as the extraordinary variety of SP applications in our daily lives and their societal impact.

Our editorial team took a unique approach to running *SPM*. We took risks, pushed the limit, and we were eager to innovate and try things that had never been done before. We embraced the motto that it is more fun being movers and shakers than being followers and being incremental. We held the attitude that if we fail, let it be, but if we succeed, we would win big. (Don't we all run research groups and do SP research in the same way?) One significant innovation we engendered over the past two years is the translation editions of *SPM* into Chinese and Brazilian Portuguese, where we saw huge emerging SP engineering bases and potential explosive readership growth. This is the first time in history that IEEE publications have done Chinese translation. References [6]–[10] are just a few examples of a larger pool of the articles we have translated to Chinese and Brazilian Portuguese. We listened closely to our readers' feedback in Asian-Pacific countries and published side-by-side English-Chinese translation. This enables them not only to read the technical content more efficiently in their native language, but more importantly, to write better SP articles in

English. To accommodate the difference between simplified and traditional Chinese styles that are both popular in Asian-Pacific countries, we created a three-column glossary for technical terms of SP in English and in the corresponding simplified and traditional Chinese pairs. As an example of the impact of this “side” glossary project within our much larger translation project, we are looking at extending our approach to all IEEE-relevant technical terms that are far beyond the scope of SP.

Another important innovation we have created and pushed hard is the use of Tag for direct and convenient access to multimedia supplementary material via smartphones, which can go with the readers everywhere. It opens a new way of linking and integrating the printed material with the author-created online content. It also opens a new opportunity for creative design of the online supplementary material (e.g., animated figures that would drastically enhance the current static figures in print, and the “just-in-time” contextual appendix, references, or video/audio/handwriting tutorials, etc.). Other notable innovations we have instituted include the (ongoing) cross-Society collaboration to attract wider audiences, digital delivery of our articles, special issues focusing on emerging SP applications [5], and publications of unique types of articles. Examples of the latter are the articles reporting vastly visible SP applications (e.g., [11] and [12]), highlighting research directions (e.g., [13]–[15]), and technical trends (e.g., [4] and [15]), and focusing on SP education or history with a lecture-note style (e.g., [16]–[20]).

Our approach turned out to be quite successful. In the latest IEEE Annual Report, our Chinese translated edition of *SPM* is prominently featured with the following strong endorsement:

... The first IEEE publication in Chinese, this special issue of *IEEE Signal Processing Magazine* was distributed in 2010 at the Society's International Conference on Image Processing in Hong Kong. ... This Chinese translation is the first step

in the Society's efforts to enhance its visibility among non-English speaking audiences. ... *SPM* ranks highest among all electrical and electronic engineering journals.

In the summers of 2010 and 2011, *SPM*'s accomplishments were reflected in Thomson Reuters' *Journal Citations Reports (JCR)*, which is generally accepted as the world's most influential source of information about peer-reviewed publications. *SPM*'s impact factor has dramatically increased from 3.76 in 2008 (ranked ninth; see the comparison group below) to 4.91 in 2009 (moved to first place) and further to 5.86 in 2010 (continues to rank first). Comprehensive compilation in the *JCR* results shows that our *SPM*'s top rank is among all publications in the broad electrical and electronics engineering field (247 of them in total, including 147 of IEEE's) two most recent years in a row. The five-year long-term impact factor of *SPM* also jumped from 5.95 (in 2009) to 6.89 (in 2010) as a result of highly cited, most recent *SPM* articles. Further, the Article Influence Score of *SPM* continues to rank number one among the 247 journals, again two most recent years in a row—2.48 in 2009, jumping to 3.18 in 2010. This is an outstanding record and an honor brought to our Society and community, which in turn validates our novel approach to running *SPM*.

Behind the success and top-ranking honor are the real heroes: our editorial team members. I thank them for taking the journey with me in our relentless pursuit of excellence and in pushing the boundaries of innovation in running our *SPM*. Area Editors Dan Schonfeld (special issues), Antonio Ortega (feature articles), Ghassan AlRegib (column/forum), and Jane Wang (together with Min Wu, as e-newsletter area editors) deserve special recognition and appreciation. Their dedicated service, infectious enthusiasm, and selfless sacrifice over the past three years have made our *SPM* what it is today. They, together with their associate editor teams, have been tirelessly working with me towards the common and clear goal of making *SPM* the best among the best. Thanks also go to our

*SPM* editorial board for their guidance in reviewing white papers, providing feedback, and setting directions. All of our editors and board members have been involved in identifying hot topics, recruiting the best authors to write papers on these hot topics, coordination of paper writing and reviewing, guarding the paper acceptance threshold, and making suggestions on how to innovate. And, of course, the fundamental credit should go to the authors, whose high-quality papers made the impact possible and to the guest editors, reviewers, and readers. Some authors not only wrote the original papers in English but also sacrificed their time helping with proof-reading (an extremely crucial step) of the translated versions.

Here I wish to express my special, wholehearted thanks to Linda Cherry, in her role of SPS publication manager as well as to her staff for the tremendous contributions, especially those to the *SPM* translation work. Linda also spearheaded the efforts to implement more cutting-edge design of our *SPM* covers, on digital delivery of our articles, and on the industry-friendly articles that are extremely popular. Her enthusiasm, creativity, dedication, and work ethic are just admirable. I counted over 2,200 e-mails between us during the past two years within my e-mail folder just on our Chinese translation project alone. Senior Managing Editor Geri Krolin-Taylor, Managing Editor Jessica Barragué, and Art Director Janet Dudar once again demonstrated a high level of professionalism in processing our highly dynamic technical content and in bringing it to the readers in the best possible way no matter how much time or effort it took.

I am also greatly indebted to Prof. Shih-Fu Chang and Prof. Ray Liu, my first- and second-level predecessors, respectively, who advised and helped me not only during the editor-in-chief transition period, but also throughout my term whenever I needed them. In 2003, Ray historically revolutionized *SPM* to its current structure as then editor-in-chief, and brought it to the number one rank. Since then, *SPM* has been on the top-ranking list, thanks to Shih-Fu and

his team's continued efforts to make it better. Several of my predecessors passed *SPM* to me already in excellent shape—it ranked 33rd, 16th, second, first, third, tenth, 12th, fifth, and ninth among over 200 journals in the field worldwide from the years 2000 to 2008. Our current *SPM* team built upon these earlier successes, not just to continue the tradition but also to aim at an even higher goal and to reach the goal with a new wave of innovations. Further, I thank Mos Kaveh, in his role as SPS president, for his support and advice as well as for taking me with him on the memorable tour of China in fall 2010 to promote SP and *SPM*'s first Chinese edition. Finally, my appreciation goes to Prof. Ali Sayed, in his role of SPS vice president, publications and SPS Executive Director Mercy Kowalczyk, for their advice on the established rules and procedures.

After this issue, *SPM* will be in the capable hands of our new editorial team. Let me take this opportunity to welcome Prof. Abdelhak Zoubir, who will soon serve as the new editor-in-chief. He will be joined by new area editors and associate editors whom he will announce soon. Given that the technologies we created and continue to create are changing the world at a pace never matched in history, there is no doubt in my mind that the new team's collective wisdom, vision, and leadership will continue our *SPM*'s current successful momentum, ensure that the golden age of our field and *SPM* is long lasting, and move *SPM* to an even higher level with more innovations to come. Indeed, the opportunity—ubiquity of SP in our modern information age—welcomed the advent of the golden era, but innovations drive it to sustain and to shine brighter.

Since I started my voluntary work for *SPM* seven years ago, my service to the SP community has never been more exciting. The past three short years have been truly exhilarating, but the term for me and my team is over and *SPM* needs new blood. Still with full energy and the desire to continue serving our Society, I thank our SPS Publications Board for appointing me as the new editor-in-chief of *IEEE Transactions on Audio, Speech,*

*and Language Processing (T-ASLP)*. This allows me to return to my home research area, continuing my service to *T-ASLP*, which was put on hold for several years due to my work for *SPM*. This is a new prime opportunity to explore different kinds of innovations in a new capacity and in a new era of the even faster pacing technological age. So we will still be in touch, especially for those *SPM* audiences who also read *T-ASLP*. Thank you all for sharing the exciting past three years with me and thank you also in advance for supporting the new *SPM* management team.

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