**附件2 报告摘要**

**数字化驱动下的交通行业转型发展之路**

郭栋

交通运输是兴国之要、强国之基。随着5G、云计算、大数据、物联网及AI等数字技术的不断涌现，交通行业正加快进入数字化时代。交通强国总目标的确定、新基建政策的发布为交通行业的数字化转型带来了发展契机。在数字化转型浪潮下，交通行业将聚焦基础支撑、共享开放、创新应用等重点环节，推动大数据与交通深度融合，实施综合交通运输数字化转型发展，以数据资源赋能行业的转型发展将成为未来发展的重点方向。

**智能网联汽车感知与规划过程中的技术问题**

徐艺

智能网联汽车是搭载先进的车载传感器、控制器、执行器等装置，并融合现代通信与网络技术，实现V2X智能信息交换共享，具备复杂的环境感知、智能决策、协同控制和执行等功能，可实现安全、舒适、节能、高效行驶，并最终可替代人来操作的新一代汽车。智能网联汽车是全球汽车产业转型升级的战略方向，我国智能网联汽车理论研究与产业化已取得了长足的进展。报告拟介绍智能网联汽车发展现状，共同探讨感知与规划过程中的技术问题。

**Heavy-Ball-Based Hard Thresholding Algorithms for Sparse Signal Recovery**

Zhongfeng Sun

The hard thresholding technique plays a vital role in the development of algorithms for sparse signal recovery. By merging this technique and heavy-ball acceleration method which is a multi-step extension of the traditional gradient descent method, we propose the so-called heavy-ball-based hard thresholding (HBHT) and heavy-ball-based hard thresholding pursuit (HBHTP) algorithms for signal recovery. It turns out that the HBHT and HBHTP can successfully recover a k-sparse signal if the restricted isometry constant of the measurement matrix satisfies $δ\_{3k}<0.618$and $δ\_{3k}<0.577$, respectively. The guaranteed success of HBHT and HBHTP is also shown under the conditions $δ\_{2k}<0.356$ and $δ\_{2k}<0.377$, respectively. Moreover, the finite convergence and stability of the two algorithms are also established in this paper. Simulations on random problem instances are performed to compare the performance of the proposed algorithms and several existing ones. Empirical results indicate that the HBHTP performs very comparably to a few existing algorithms and it takes less average time to achieve the signal recovery than these existing methods.