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The Effect of Imperfect Channel Knowledge on a MIMO System with Interference

N. Lee, O. Simeone, and J. Kang

- Model: Transmitter communicating with a receiver with an interferer
- Objective: Data rate maximization
- Assumptions:
  - Transmitter knows everything about interferer + Perfect CSIR and perfect CSIT
    - Solution: DPC achieves the optimal rate
  - Transmitter has full knowledge of the interferer + Perfect CSIR and imperfect CSIT
    - Question: DPC or decode the interference?
    - Send the interfering signal to the receiver via BF + decode and use it as side information (BF-JD)
- Main result: full knowledge of the interferer + Perfect CSIR and imperfect CSIT: BF-JD is better compared to DPC

A Cost-Effective Strategy for RSU Placement in Vehicular Networks

Tsung-Jung Wu, Wanjiun Liao, Chung-Ju Chang

- System Model: Vehicles access a device called RSU to communicate
- RSUs acts as gateways with backhaul access to the Internet
- Problem Addressed: Where should we place the RSUs? Busy road or uniform?
- Assumptions: The traffic distribution is known
- Main contribution:
  - Problem statement: Maximize throughput subject to constraints (a lot of them!)
  - Problem nature: Linear Integer Programming
- Main result: A non-uniform placement that depends on the traffic distribution is the optimal choice

Does More Transmitting Sensors Always Mean Better Decision Fusion in Censoring Sensor Networks with an Unknown Size?

Tsang-Yi Wang, Member and Jwo-Yuh Wu

- Main problem addressed: See the title
- N sensors observes a phenomenon of binary nature (H_0 versus H_1)
- Sensors: Collects the observation, employs censoring:
  - Send 1 (I am confident, and H_1 is true)
  - Send (-1) (I am confident, and H_0 is true)
  - Send nothing (I am confused)
- Modified CV rule as N is unknown
- Threshold that decides censoring is found
- Main result: censoring helps

Achievable Rates of Multi-Antenna DL Channels with Peak Power Constraints

Ihn-Jung Baik, Sae-Young Chung, and Junmo Kim

- Model: MISO DL channel with per antenna peak (also the average) power constraint
- Difficulty: Capacity is unknown for BC with **peak per antenna** power constraint
- Solution: Use DTC
- Method used (average per antenna peak power constraint)
  - Fact: Capacity is known in this case!
  - Optimize the capacity with per antenna power constraint
  - How? Proposed algorithm
    - Convert the problem of average power constraint to the total power constraint
    - Optimize, and get the optimal BF vector
- Simulations: Proposed method is better than MMSE BF based scheme, and single user allocation based scheme

References

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  Filippo Tosato
- (**TIT-Sep-2012**)The Stability of Low-Rank Matrix Reconstruction: A Constrained Singular Value View
  CGongguo Tang, and Arye Nehorai