Snap-Stabilization in Message-Passing Systems

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Comparing Self and Snap stabilization

* Self stabilization is **system-centric**
* Snap stabilization is **user-centric**
Concrete example

* system: the restaurant

* user: the client

* specification:

upon request, the client obtains some food
Concrete example

* system: the restaurant

* user: the client

* specification:
  upon request, the client obtains some food
Concrete example

* system: the restaurant
* user: the client
* specification:

upon request,
the client obtains some food
Difference

* self stabilizing way: after the last fault, the client may have to request food a **finite** number of times before being serviced

* snap stabilizing way: after the last fault, when the client asks for food once he obtains some food
Snap stabilization in message passing system

* a lot of work on snap stabilization but not in message passing system

* a lot of work on self stabilization in different models including message passing

* Open question: snap stabilizing in message passing system
Result 1

non-trivial snap-stabilizing algorithms can not exist in message-passing systems if channels can have an unknown bounded number of messages in transit.
Result 2

* snap-stabilization in message passing model is possible if the channels have (known) bounded capacity.

* example: in the paper we present snap-stabilizing solutions for several classic problems: propagation with feedback (PIF), identifier discovery and mutual exclusion.
End of the talk

* thank you for your attention
* more information on

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