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

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  upon request,
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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

  https://hal.inria.fr/inria-00248465