



Michał  
Podpora

# **COMPUTER VISION IN PARALLEL COMPUTING – REDUCING COMMUNICATION TIME**

mgr inż. Michał Podpora  
PhD student

Opole University of Technology, Poland  
Faculty of Electrical Engineering, Automatic Control and Computer Science  
Institute of Automatic Control and Computer Science



# Agenda

1. A few words about sight
2. From „human vision” to „machine vision”
3. Parallel computing in computer vision (?)
4. What is the „communication time”?
5. Summary and future work

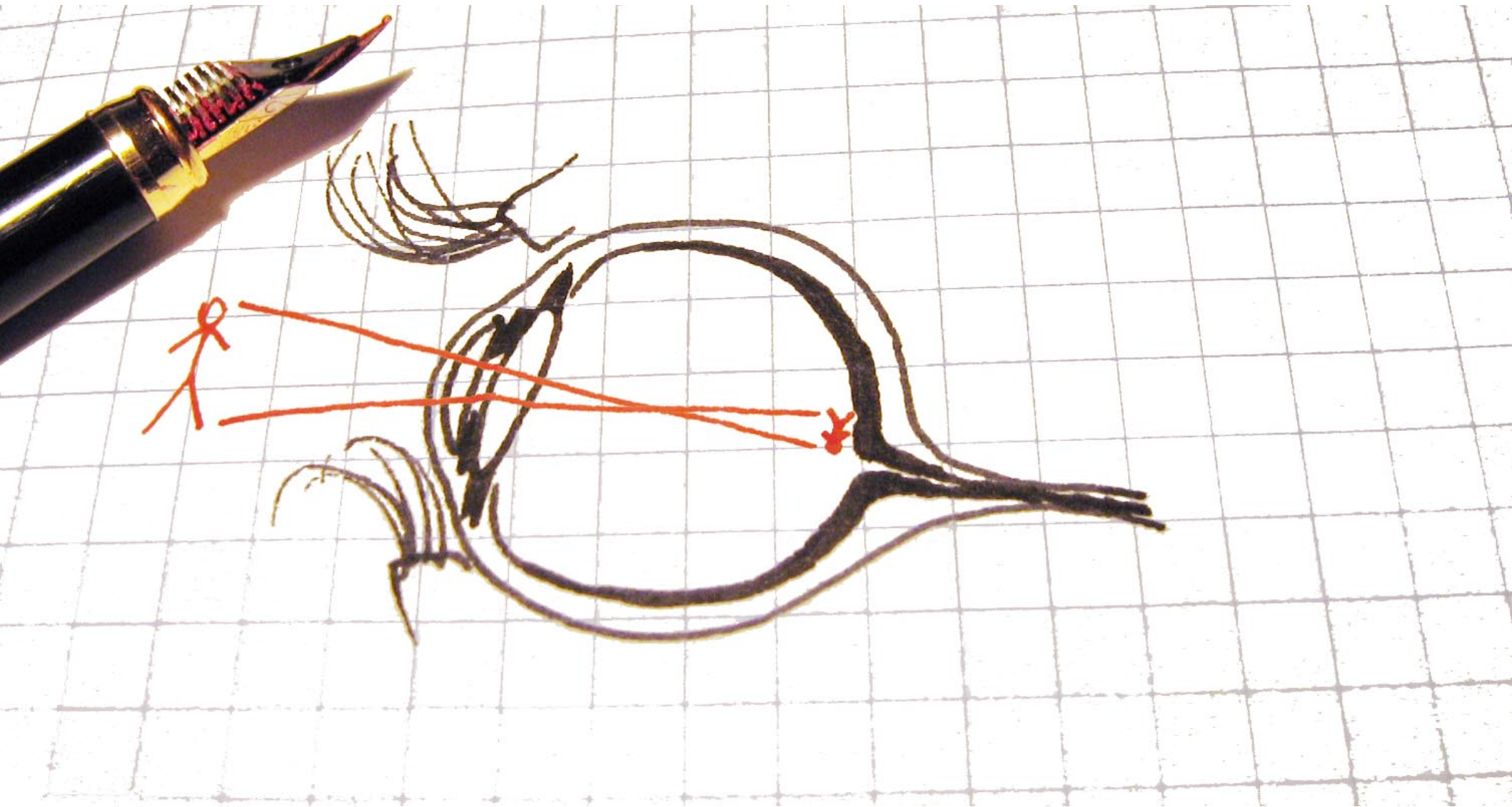


# 1. A few words about sight





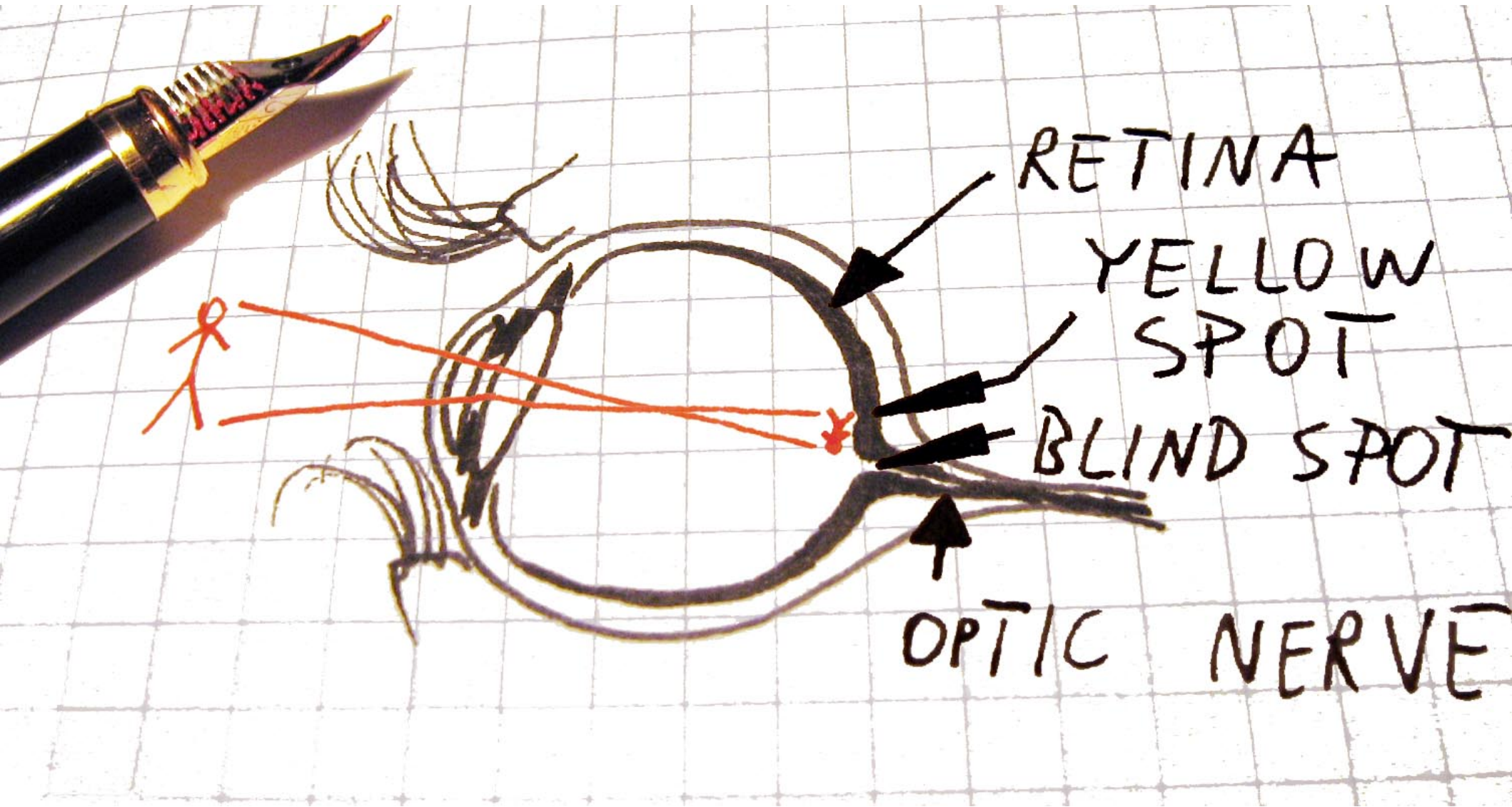
Michał  
Podpora







Michał Podpora



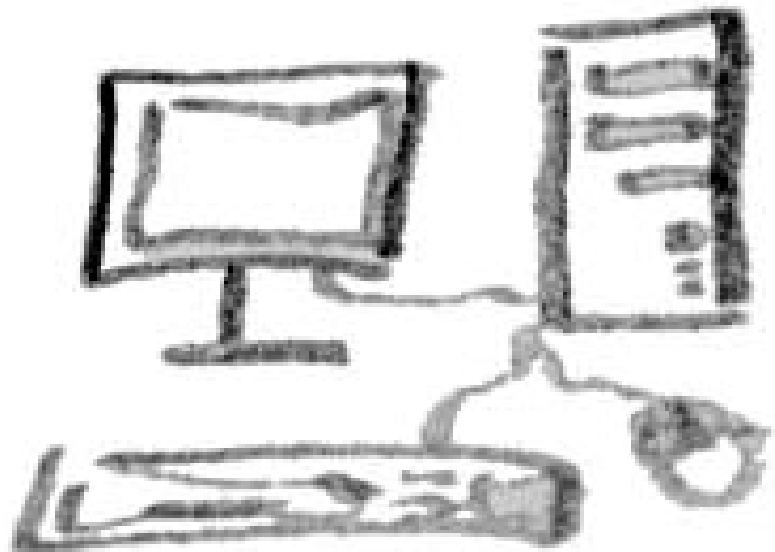


## 2. From „human vision” to „machine vision”



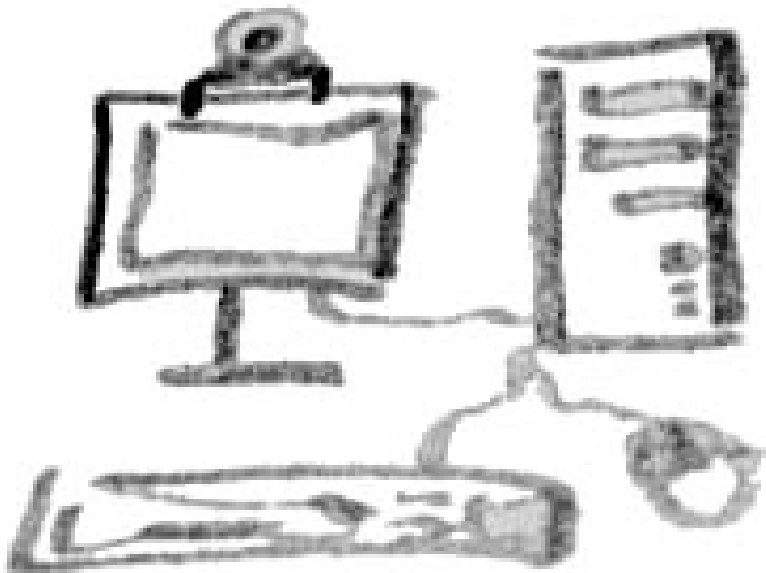


Michał  
Podpora





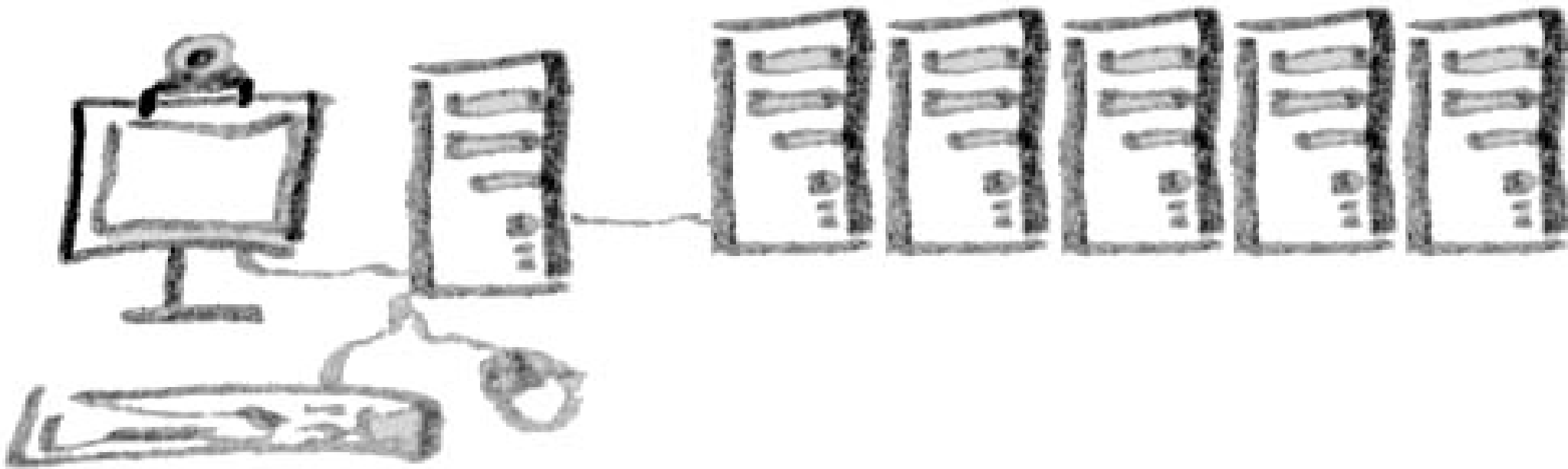
Michał  
Podpora







### 3. Parallel computing in computer vision (?)



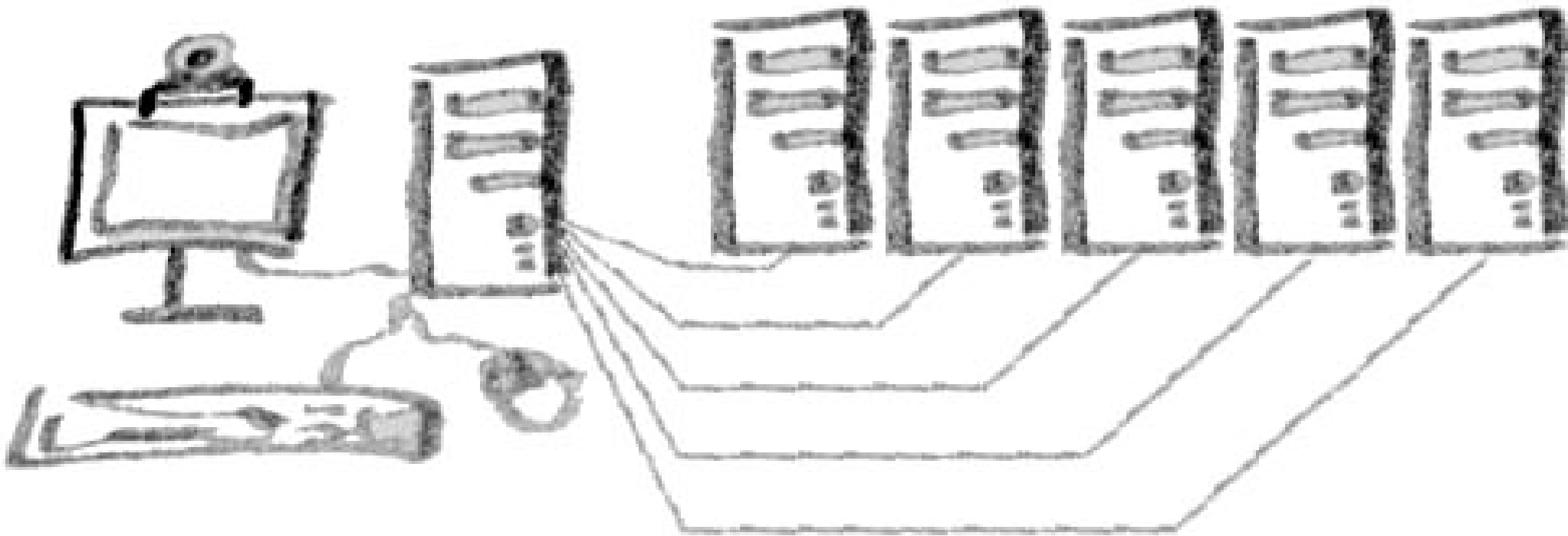


## 4. What is the „communication time”?



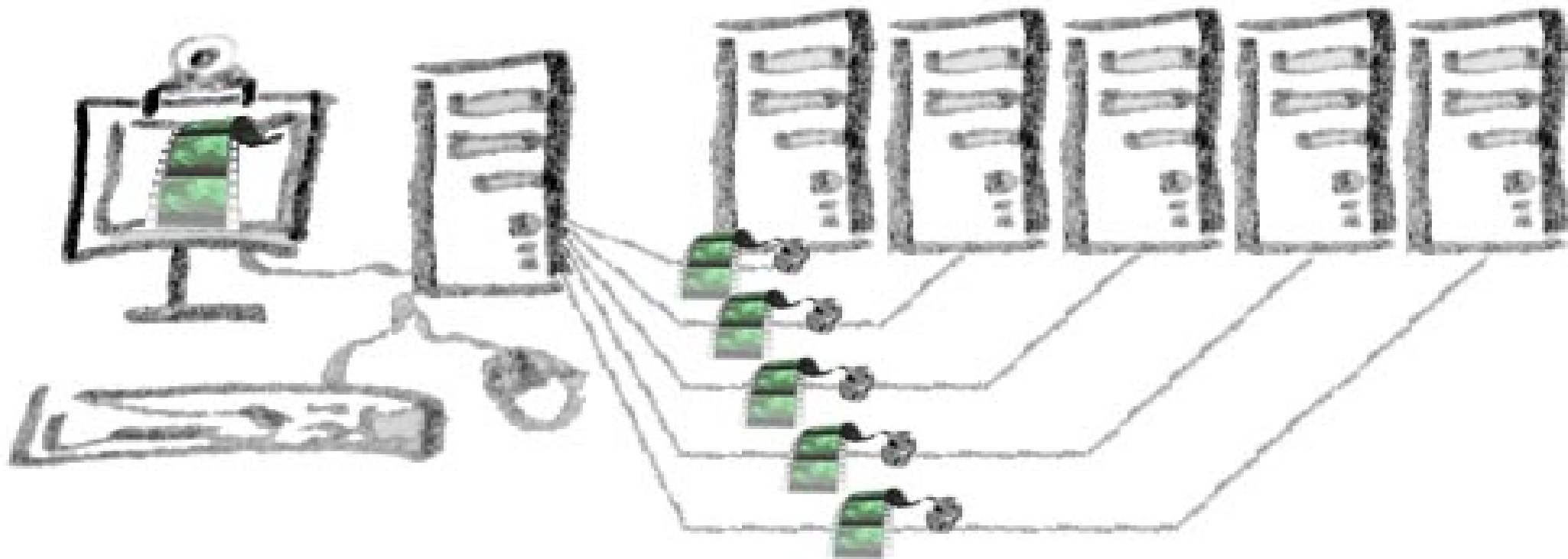


Michał  
Podpora



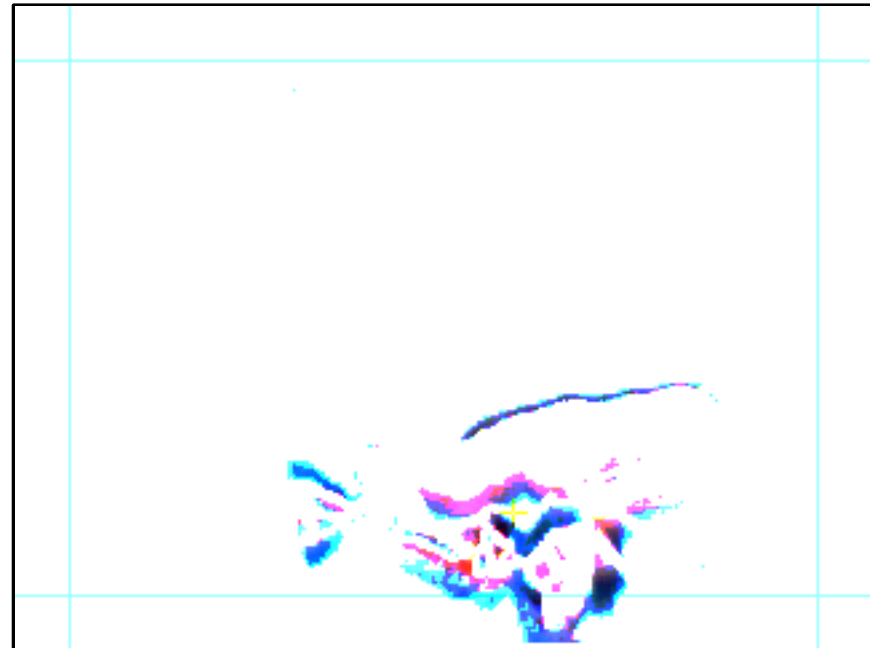


Michał  
Podpora





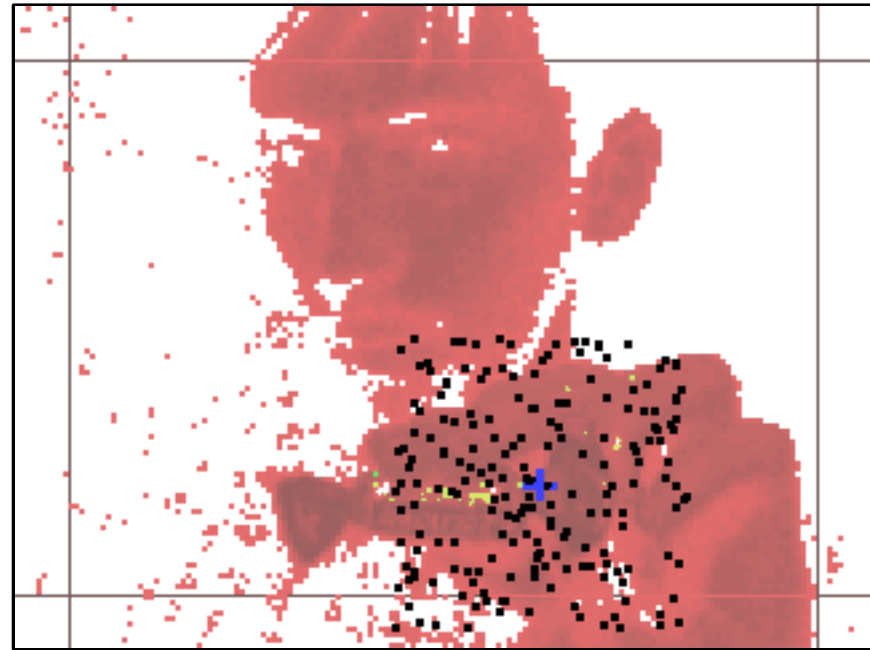
# Communication time is the key /some ideas about minimisation/







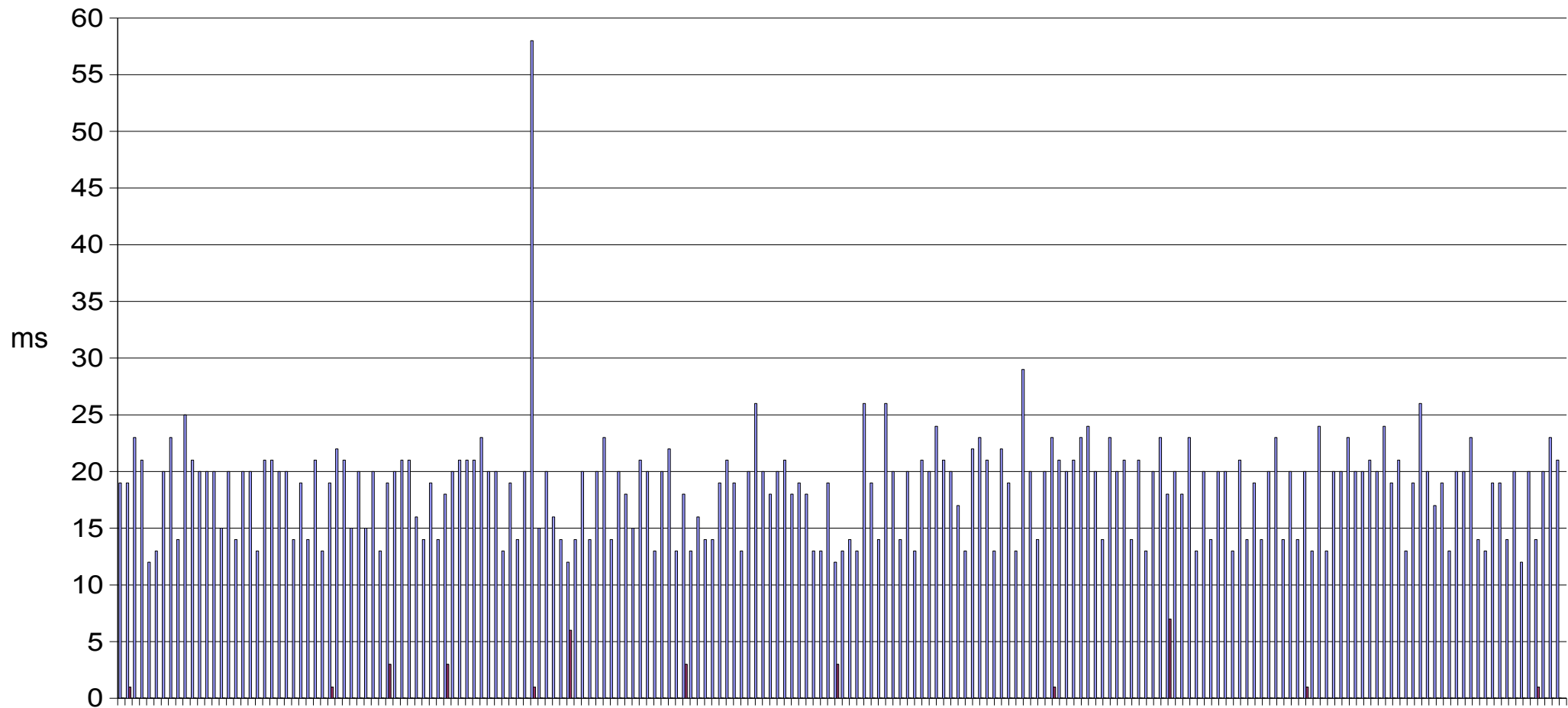
# Communication time is the key /some ideas about minimisation/





# communication time (2 nodes on 2 machines)

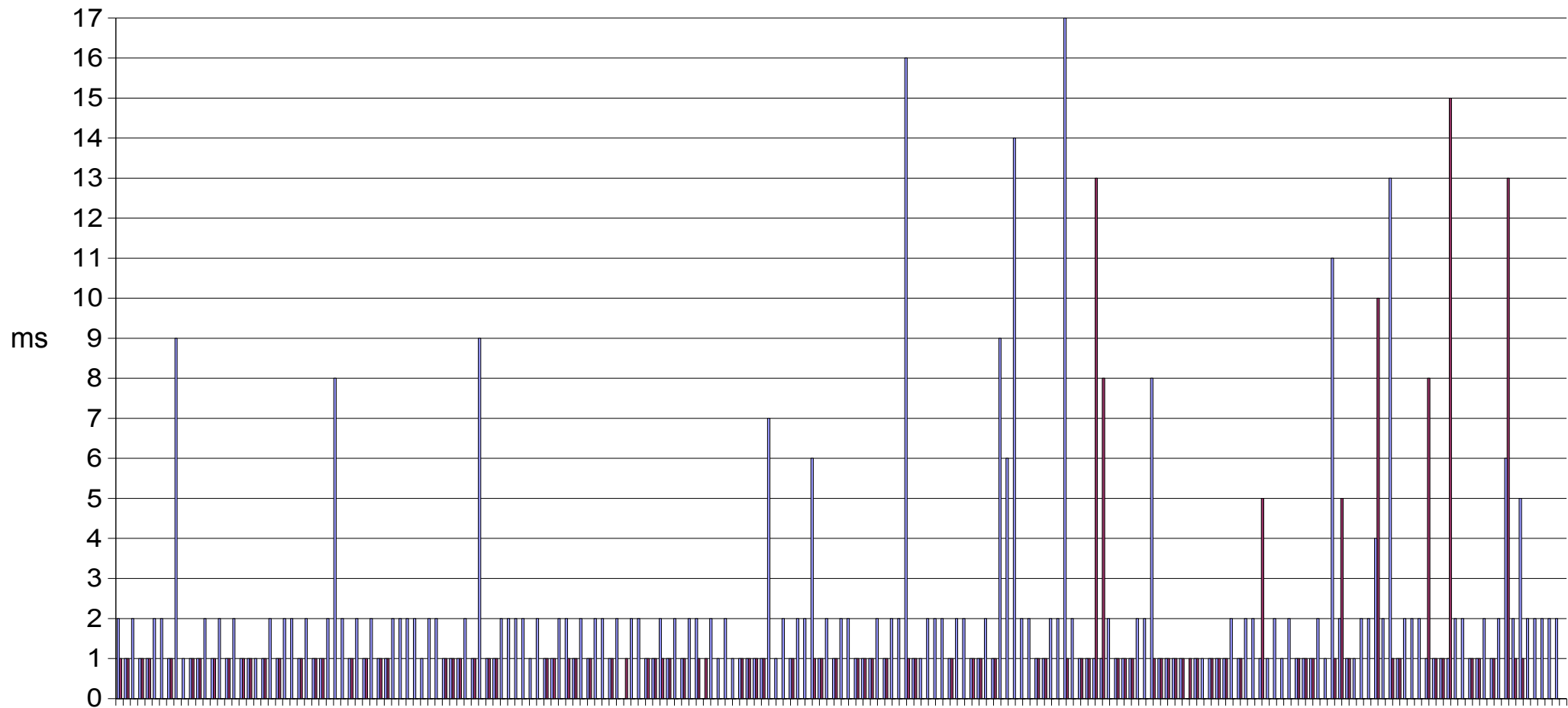
200 frames; average video frame transmitting time = 18,6 ms; average nn structure communication time = 0,16 ms





# communication time (2 nodes on 1 machine)

200 frames; average video frame transmitting time = 2,08 ms; average nn structure communication time = 0,84 ms





## 5. Summary and future work





# References

- [1] Karbowski, A., Niewiadomska-Szynkiewicz, E., *Obliczenia Równoległe i Rozproszone*, Oficyna Wydawnicza Politechniki Warszawskiej (2001)
- [2] Hecht, E.: *Optics*, Addison Wesley, 4<sup>th</sup> edition (2002)
- [3] Fisher, R.B., *CVonline – Compendium of Computer Vision*, available: <http://homepages.inf.ed.ac.uk/rbf/CVonline/all.htm> (2006)
- [4] Ballard, D., Brown, C., *Computer Vision*, Prentice Hall Professional Technical Reference (1982)
- [5] Mather, G., *Introduction to Motion Perception*, available: [http://www.lifesci.sussex.ac.uk/home/George\\_Mather/Motion/](http://www.lifesci.sussex.ac.uk/home/George_Mather/Motion/) (2006)





Thank You for Your attention  
/discussion?/

---

**COMPUTER VISION IN PARALLEL COMPUTING  
– REDUCING COMMUNICATION TIME**