

# How to Write Fast Code

18-645, spring 2008

25<sup>th</sup> Lecture, Apr. 16<sup>th</sup>

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**TAs:** Srinivas Chellappa (Vas) and Frédéric de Mesmay (Fred)

# Research Project

- Project expectations
- Paper templates and instructions will be uploaded soon

April						
<i>Sun</i>	<i>Mon</i>	<i>Tue</i>	<i>Wed</i>	<i>Thu</i>	<i>Fri</i>	<i>Sat</i>
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

2008

- Today
- Papers due
- Last class:  
poster session  
5:30 – 8:30
- Due:
  - Final papers
  - Final code

# Poster Presentation

- Apr 30<sup>th</sup>, 5:30 – 8:30pm
- Scaife Hall and area around it
- **You have to buy card board** (e.g., Kinko's) around 2.5 x 3.5 feet
- You can create a set of slides or a poster that fits
- We provide easel (or stand)
- More details on poster making next week

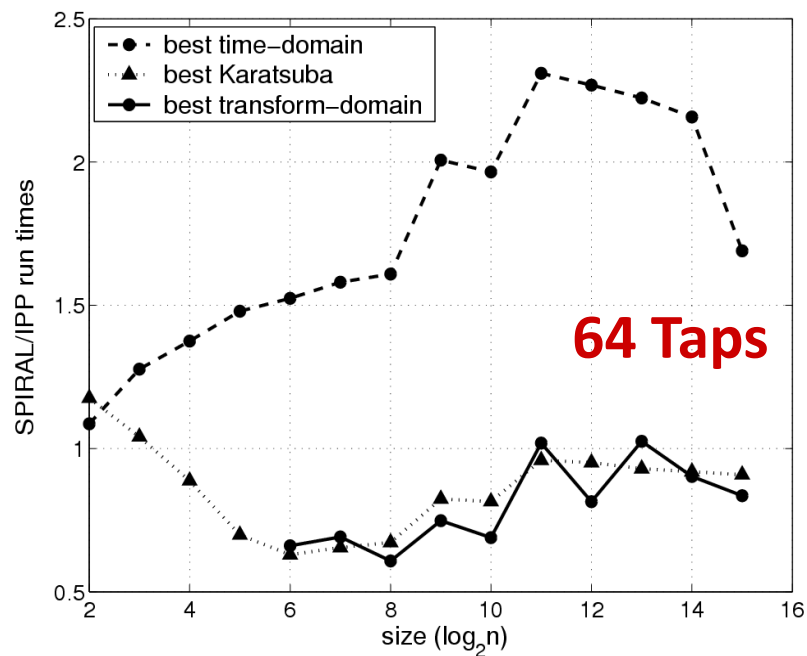
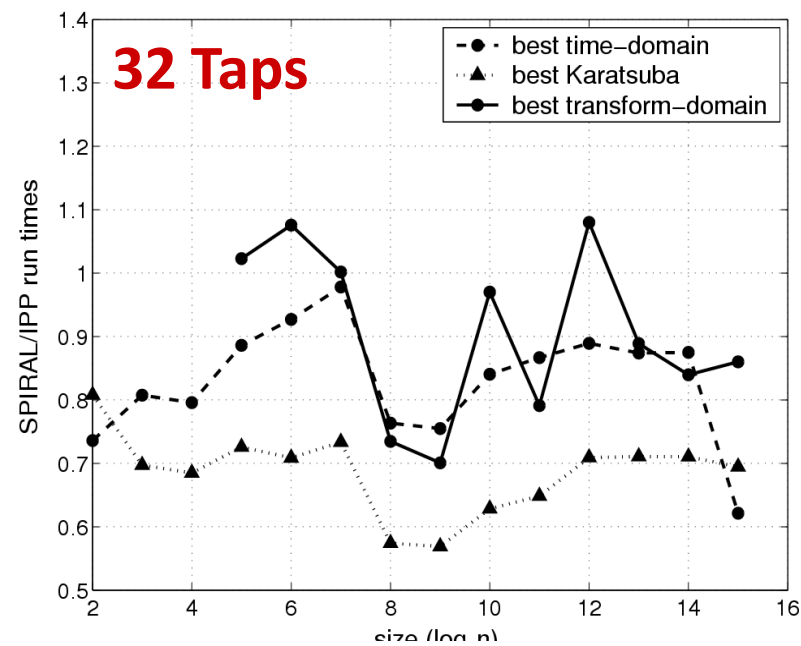
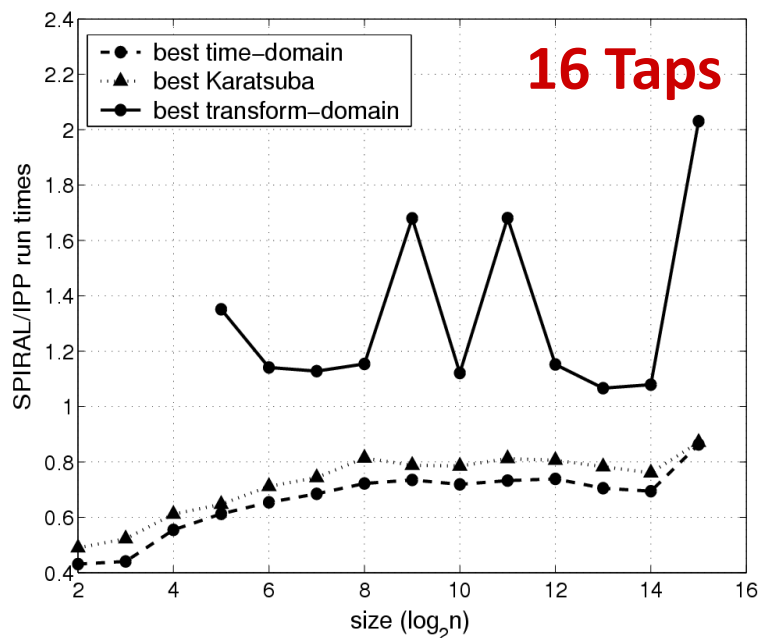
# Last Time: Matlab

- Writing fast Matlab code
- Profiling tool to find hotspots
- Use Mex interface to implement hotspots in C
  
- **Consequence:** all techniques learned in this class are applicable to (considerably) speeding up your Matlab code

# Feedback on Feedback

- Many positive remarks: thank you
- Skipping one homework?
- Some lectures too mathematical
- Methods generally applicable?
- CUDO/GPU or other latest platforms
- Some homeworks are long
- More time for project
- Parallel/threading: earlier, more
- Compiler flags
  
- These and others and previous comments  
→ next time I teach this class

# FIR Filters



## Athlon XP 1.73

- 16: Time domain wins
- 32: Karatsuba wins
- 64: Karatsuba/DFT ~equal

# Best Filter Algorithms

	16-tap	32-tap	64-tap	128-tap
Pentium 4 3.0GHz Northwood	Blocking	Karatsuba	RDFT	RDFT
Pentium 4 3.6GHz Prescott	Blocking	Karatsuba	Karatsuba	RDFT
Macintosh	Karatsuba	Karatsuba	RDFT	RDFT
Xeon 1.7 GHz	Blocking	Blocking	Blocking	RDFT
Athlon 1.73GHz	Karatsuba/ Blocking	Karatsuba	Karatsuba/ RDFT	RDFT