Tasks and Interruptions
Multi Tasking and Task Interruption

- **What is multi tasking?**
  - The ability to perform multiple tasks simultaneously
  - Involves switching back and forth between tasks.
- Social media (Facebook, twitter)
- Answering a phone call
- Surfing the web
- Responding to an email
- Writing a report[14]

Source: https://www.brainscape.com/blog/2011/03/truth-multitasking/
Why Multi task?

- We live in a busy world
- Trying to meet deadline in a tight schedule
- Productivity demand[16]

Source: https://www.123rf.com/stock-photo/question_mark.html
Does multi tasking increase productivity?

- Multitasking does not increase productivity.
  - Check the video below[15]
    “Multi-tasking ban to boost workplace productivity”
    [Click here](#)

“Discussing multitasking with the New York Times in 2007, Jonathan B. Spira, an analyst at the business research firm Basex, estimated that extreme multitasking—information overload—costs the U.S. economy $650 billion a year in lost productivity”.
Extreme Multi tasking affect the human brain

- Human brain is designed to perform one task at a time
  - “multitasking adversely affects how you learn. Even if you learn while multitasking, that learning is less flexible and more specialized, so you cannot retrieve the information as easily.” (Russell Poldrack).
“Do not multi task when learning new stuff!”
Some Key Terms

- **Interruption lag** is a brief transitional interval immediately preceding an interruption, during which we know of the pending interruption but are not yet engaged by it.
- **Resumption lag** is time needed to "collect one’s thoughts" and restart a task after an interruption is over.
- **Attentional Draw (AD)** is how quickly attention is drawn to a notification.
- **Utility** is the usefulness of the interruption content.
What is Task Interruption

- Boehm-Davis and Remington define an interruption as “the suspension of one stream of work prior to completion, with the intent of returning to and completing the original stream of work”.
- Three factors determine the disruptiveness of an interruption: interruption duration, complexity of the interrupting task, the moment of interruption.
- Whether it’s a big crisis or a simple relaxation break, you don’t realize how much time you’re losing to interruptions.
- Interruptions can be miniscule and take just minutes of our time, but number of them points to a costly problem.
What is Task Interruption

- Working on task
- Interruption
- Attention moves to new task
- Interruption & task completed
- Return to original task
- *What was I doing again??* Time to re-orient yourself to the original task.

Where Do These Interruptions Come From?

- A little reading, write a post, respond to some emails, send some tweets, then do it all over again.

Communication

Head-down work

Responding to an abnormal condition or to an unexpected situation.

source: https://www.brainscape.com/blog/2011/03/truth-multitasking/
Effect of task Interruptions

- How many times do you get interrupted every day at work?
- The longer and more complex the interruption is, the longer it takes to resume the interrupted task and the more errors are made after the interruption.
- In one classic result, interrupted tasks were remembered better than tasks that were allowed to run to completion.
- In more applied work interruptions have detrimental effects on situational awareness in dynamic environments like aviation.
Effect of task Interruptions

- Interruptions within subtasks (worst) are more disruptive than interruptions between subtasks (best).
- Forced interruptions at points of higher mental workload are more disruptive than at points of lower workload
- Interruptions can cause increased anxiety, or annoyance.
- Interruption annoyance is lower when the perceived benefit is higher.
Interruption: How it Affects the Task

- Decreased decision accuracy
- Increased decision time for interrupted task
- The impact of an interruption on a task is also based on the complexity of the task being interrupted and the number of interruptions received in a given time.
- Interruptions can cause perceived difficulty in completing the primary task
Managing task Interruptions

- Beforehand, recognize and identify the interruption.
- Afterward, re-establish situational awareness as follows:
  - Identify: What was I doing?
  - Ask: Where was I interrupted?
  - Decide/act: What decision or action shall I take to get “back on track”?
- Some actions are postponed until time and conditions permit. Requesting a delay will prevent being rushed in the accomplishment of competing actions (take time to make time).
- When users are alerted to interruptions at points of higher mental workload they delay processing of the interruption until they have reached a point of lower mental workload.
- Users visually re-encode the task environment to reconstruct the task context immediately prior to interruption.
Managing task Interruptions

- Reconstruction of task context is a critical and central process for resumption after interruption.
- Memory-based and reconstruction-based resumption processes are not mutually exclusive. In fact, we might expect that part of the reconstruction process may involve cueing of relevant memories by the external environment.
- When Users are alerted to interruptions at points of higher mental workload they delay processing of the interruption until they have reached a point of lower mental workload.
- Cue availability during the interruption lag affected performance at task resumption at least for longer interruption lags.
- Make the amount of attention attracted by a Notification to be relative to the usefulness of the interruption content.
Conclusion

- Humans are not designed to multitask. Multi-tasking from a human perspective is just “task interruption”.
- It is necessary for us as HCI professionals to start designing our application in a way to enhance human multitasking.
Discussions

- Is multi tasking and task interruption avoidable or unavoidable?
- What Can You Do to Cut the Cost of Interruptions?
Discussion

- scheduling notifications at *breakpoints has been shown to* reduce cost of interruption.
- Training.
References

15. https://www.youtube.com/watch?v=FRFRodWEYz8
17. mercercognitivepsychology.pbworks.com.