Linux Kernel Programming
General Course Information

Pierre Olivier

Systems Software Research Group @ Virginia Tech

January 16, 2017

Virginia Tech

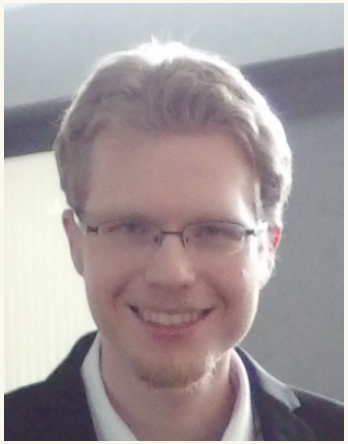
Virginia Tech

Outline

Virginia Tech

The instructor

- Pierre Olivier
- Postdoc in *Systems Software Research Group* @ Virginia Tech
  - `http://www.ssrg.ece.vt.edu/`
- Office: Durham 453
- `polivier@vt.edu`

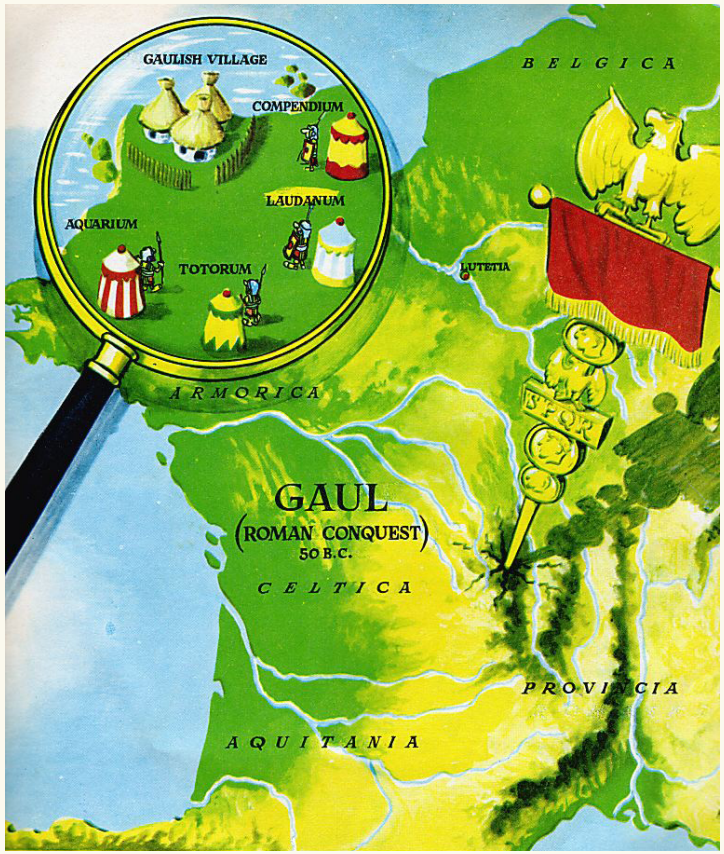


Virginia Tech

The instructor (2)

Pardon my French

- PhD in 2014 from university of Western Brittany in Brest, France
  - Working in embedded OS/storage management
  - Modelling the flash storage stack behavior of embedded Linux



The instructor (2)

Pardon my French

- PhD in 2014 from university of Western Brittany in Brest, France
  - Working in embedded OS/storage management
  - Modelling the flash storage stack behavior of embedded Linux

Virginia Tech

The instructor
SSRG

- Linux/OS related projects we are working on:
  - **Popcorn Linux:**
    - *Multi-kernel* OS based on Linux for performance scalability on multi-cores
    - Provides *run-time task migration between heterogeneous architectures*
    - Currently working on *rack-scale heterogeneous popcorn Linux*
    - Investigating NVMe applications
  - **Popcorn Xen:**
    - Hypervisors collaboration on heterogeneous hardware
    - Running *Unikernels*
- Opportunities for Undergraduate Research/Independent Study, MS/PhD thesis

Virginia Tech

Outline

Virginia Tech

Course website

- Managed through **Canvas**, 3 sections:
  - Blacksburg VT campus graduate students (5984)
  - WebEx remote graduate students (5984)
  - Blacksburg VT campus undergraduate students (4984)
- All united under a single course on canvas: **Linux Kernel Programming**

  `https://canvas.vt.edu/courses/45565/`

  - Please check that you can access it ASAP, otherwise send me an email
- **Check it out very regularly, important things will be posted there:**
  - Syllabus, lecture slides, projects assignments
  - E-mail used for important notifications

Virginia Tech

Outline

Grading

Type of graded work	Percentage of final grade
Programming projects	90%
Final exam	10%

- **Projects** constitute most of the grade
  - *Small* projects
    - 1 to 2 weeks of work each
    - 4984: 4 small projects (10-20% of the grade)
    - 5984: 3 small projects (5-10%)
  - *Large* projects
    - 3 weeks to 1 month of work each
    - 4984: 1 large project (35% of the grade)
    - 5984: 3 large projects (20-30%)
  - **Gradual difficulty**

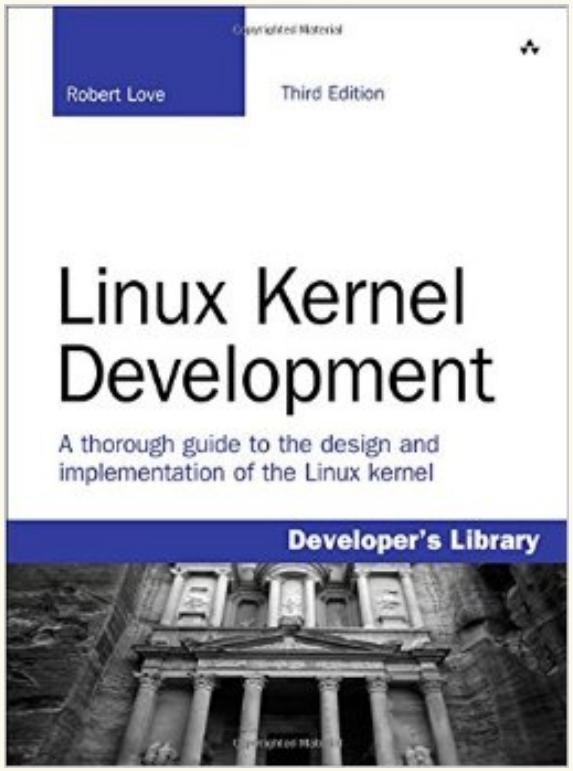
Virginia Tech

Outline

Texts

Required book

- *Robert Love*,
  Linux Kernel Development,
  3rd edition
  Addison-Wesley Professional
- ISBN-10: 0672329468
- ISBN-13: 978-0672329463



Texts (2)

Recommended books

- Bovet, D. P., & Cesati, M. (2005). ***Understanding the Linux Kernel**, 3rd Edition*. O'Reilly Media. Pp. xvi, 944;
- Corbet, J., Rubini, A., & Kroah-Hartman, G. (2005). ***Linux Device Drivers**, 3rd Edition*. O'Reilly Media. Pp xvii, 640;
- Mauerer, W. (2008). ***Professional Linux Kernel Architecture**, 1st Edition*. Wrox. Pp. xxx, 1368;
- Love, R. (2013). ***Linux System Programming: Talking Directly to the Kernel and C Library**, 2nd Edition*. O'Reilly Media. Pp. xx, 456.

Outline

Office hours

- All office hours will be located in **Durham 460**
- With Pierre:
  - **Monday and Wednesday from 1 PM to 2 PM**
  - Remote (WebEx) students:
    - `polivier@vt.edu`
    - Can arrange Skype calls if needed
- Teaching Assistant: Fazla Mehrab
  - **Tuesday and Thursday from 2:45 PM to 4:45 PM**
  - `mehrab@vt.edu`

Virginia Tech