

# Lorenzo Stoakes

## LINUX KERNEL

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I hold five maintainerships: memory mapping, memory mapping (locking), memory mapping (madvise) – essentially the entirety of the userland API to memory management – Transparent Huge Pages (THP) – which enables transparent use of large pages for improved performance – and the reverse mapping – which connects physical to virtual memory.

Since I started my professional kernel career I have become the number one contributor by patches and lines of code and the number two top reviewer, within core memory management.

I am working on an entirely new approach to the anonymous reverse mapping which permits these operations to be performed under the RCU lock and with very significantly reduced memory consumption, which I will be presenting at LSF/MM/BPF 2026.

I have added several memory management features – lightweight guard regions, multi-mapping mremap() moves, softleaves and PIDFD\_SELF, among others. I also eliminated limitations on virtual address space flags and am in the midst of doing so for VMA flags, which is otherwise a blocker on new features.

I am also in the midst of updating the memory mapping interface of every driver and file system in the kernel to address stability and security concerns.

I reworked the entirety of the VMA merge mechanism as well as mremap(), madvise(), mmap(), and the anonymous reverse mapping, reducing lock contention (by 14% operations/second according to one benchmark) as a result.

I have spoken at Linux Plumbers, Kernel Recipes, and the key memory management conference, LSF/MM/BPF.

## THE LINUX MEMORY MANAGER

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THE LINUX  
MEMORY  
MANAGER



I have written a 1,300 page textbook entitled the **Linux Memory Manager** which comprehensively describes the memory management subsystem of the Linux kernel, published by No Starch Press.

This takes a bottom-up approach, exploring Linux v6.0's source across physical and virtual memory management, process memory, memory mapping, page faults, the reverse mapping, memory manipulation, the page cache, writeback, reclaim, swap, the OOM killer and a chapter on practical memory management.

[nostarch.com/linux-memory-manager](https://nostarch.com/linux-memory-manager)

## WORK EXPERIENCE

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### CONSULTING MEMBER OF THE TECHNICAL STAFF (IC5), ORACLE

JULY 2024 – NOW

At Oracle I am focused on upstream memory management Linux kernel development.

### LEAD SOFTWARE ENGINEER, WORLDQUANT

JULY 2022 – JUNE 2024 (2 YEARS)

At WorldQuant I worked as a low-latency C++ developer in the Simulation team, focused on systems development in Linux.

### SOFTWARE ENGINEER, SQUAREPOINT CAPITAL

MARCH 2019 – JULY 2022 (3 YEARS 4 MONTHS)

At Squarepoint Capital I worked as a low-latency C++ developer in the Order Gateway team.

### SOFTWARE ENGINEER, IMAGINATION TECHNOLOGIES

DECEMBER 2016 – MARCH 2019 (2 YEARS 3 MONTHS)

At Imagination Technologies I worked as a C developer on the GPU Linux kernel driver implementation.

### SENIOR SOFTWARE ENGINEER, BALENA

MARCH 2012 – DECEMBER 2016 (4 YEARS 9 MONTHS)

I was employee #1 at Balena shortly after it was founded and worked in a senior position as it grew from 3 to 30+ employees and received multiple million-dollar rounds of funding.

## EDUCATION

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### 2005 MEng Civil Engineering

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*Imperial College, London*

### 2000 A-Levels

A – Physics, Maths, Further Maths

B – Economics (As)

*Exeter College, Exeter, Devon*

### 1998 GCSEs

3 A, 3 B, 3 C

*St. Luke's High School, Exeter, Devon*

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📖 | [ljs.io/kernel](https://ljs.io/kernel)

📄 | [github.com/ljskernel](https://github.com/ljskernel)