CSC 255/455 Schedule, Spring 2018 (January 4)

Week	Lecture	Date	Topic	Reading	Assignment
1	1	17-Jan	introduction	EAC 1, 8.1-8.3	trivia
2	2	22-Jan	value numbering, local	EAC 8.4.1	trivia due
	3	24-Jan	value numbering, superlocal	EAC 8.5.1, 10.5	LVN
3	4	29-Jan	data flow analysis, AVAIL	EAC 8.6, 9.1-9.2	
	5	31-Jan	data flow analysis, LIVE	EAC 8.6, 9.1-9.2	LVN due
4	6	5-Feb	LLVM intro	EAC Ch. 9.2, 10.2	LLVM trial
	7	7-Feb	def-use, DCE	AK 4.4.1-4.4.2	
5	8	12-Feb	data flow properties	Dragon 9.3	LLVM trial due
	9	14-Feb	static single assignment (SSA)	EAC 9.3	hw1
6	10	19-Feb	SSA DCE and copy-propagation, PRE	SSA 1, 8	hw 1 due, hw2
	11	21-Feb	inst. scheduling, software pipelining	EAC 12.1-3, 12.5	
7	12	26-Feb	interprocedural, alias and point-to	AK 11.2.2	hw 2 due
	13	28-Feb	CFL reachability, correctness	Reps 1-3, 4.1	
8	14	5-Mar	**mid-term exam**		opt assigned
	15	7-Mar	introduction: high-level transformation	AK 1	opt 1 (loop) due
9	16	19-Mar	dependence theory	AK 2.2	
	17	21-Mar	loop dependence, fundamental theorem	AK 2.2	
10	18	26-Mar	(away at ASPLOS) dependence testing	AK 3 (excluding Banerjee in 3.3.3)	opt 2 (index) due
	19	28-Mar	Allen-Kennedy vectorization	AK 2.4	
11	20	2-Apr	parallelism: loop interchange, scalar expansion, node splitting,	AK 5.2-5.5	hw 4 assigned
	21	4-Apr	control dependence	AK 7.3	opt 3 (dep) due
12	22	9-Apr	data-parallel languages/compilers	AK 14.1-4.2	hw 4 due
	23	11-Apr	locality: reuse distance, working set	unpublished text	
13	24	16-Apr	register allocation	EAC 13	hw5 assigned
	25	18-Apr	unroll-and-jam, blocking	AK Ch. 8.4	opt 4 (par) due
14	26	23-Apr	collaborative caching	unpublished text	
	27	27-Apr	advanced topics: ML, Tapir, Halide, RUST, Julia, auto-tuning, verification, Haskell	lecture slides	hw5 due
15	28	30-Apr			
		8-May	**final exam (12:30pm)**		

EAC: Engineering a compiler, by Cooper and Torczon, 2nd ed.
AK: Optimizing compilers for modern architectures, by Allen and Kennedy
SSA: Static single assignment book, many authors, ssabook.gforge.inria.fr/latest/book.pdf
Dragon: Compilers principles, techniques, and tools, by Aho, Lam, Sethi and Ullman