

1096-05-1591 **Dennis Wong*** (cwong@uoguelph.ca). *Gluing universal cycles and de Bruijn sequences.*

We present a simple lemma that describes when two universal cycles can easily be concatenated together to obtain a new universal cycle. This led to the first known efficient universal cycle construction for the set of binary strings of length n with weight (number of 1s) in the range $c, c + 1, \dots, d$ where $0 \leq c < d \leq n$. The famous FKM algorithm can then be viewed as recursively concatenating small universal cycles (aperiodic prefixes) to obtain a universal cycle for the set of length n binary strings. We also demonstrate a simple construction in a similar fashion that constructs the lexicographically least universal cycle for the set of length n binary strings whose weight are in the range $c, c + 1, \dots, n$.

The Gluing lemma can also be applied to construct universal cycles for other combinatorial objects including passwords and labeled graphs.

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