The goal of our work is to determine the extent and categorize the type of processor faults due to EM interference on various modules of a computer system; in this presentation we will focus on EM interference on memory address and data lines and how it affects processor functioning. We will present the conceptual framework for detecting errors in processor functioning and classifying them as either (1) "data errors" or (2) "control errors". Algorithm-based fault tolerance (ABFT) techniques will be used for detecting data errors, while control-flow checking (CFC) using a watchdog processor will be used for detecting control errors. ABFT techniques work by encoding the inputs using schemes like checksums and verifying that the output produced is also correctly encoded data. For example, in matrix multiplication, the two input matrices A, B can have a checksum row and column, respectively, in which case the product matrix C should have both a checksum row and column (i.e., the sum of all data rows of C should be equal to its checksum row, and the sum of all data columns of C should be equal to its checksum column). CFC techniques work by constructing an instruction flow graph of a program and producing an error-detecting function \( f \) of the set of instruction bit patterns on each subpath and storing them in intermediate NOP (no operation) instructions at the ends of the subpaths. The sequence of instructions executed is then checked on-line by a watchdog processor that "snoops" on the address and data buses of the main processor to determine if \( f(\text{subpath of instructions actually executed}) \) matches the stored function value at the end of the subpath. These ABFT and CFC methods will be presented. On the implementation side, a processor will be described in VHDL and fault injection logic will be introduced for the memory buses that can be turned on and off individually and in clusters to simulate the type of fault patterns caused by EM interference. The status of this part of the implementation will be discussed.