**高变成[(input\_height-filter\_height)/stride+1]**

**宽变成filter\_height\*input\_width**

**一维数组中的对应关系：**

**Im2win矩阵 m\*filter\_height+n = input矩阵 n\*input\_width+m**

步长为1，核为2x2

|  |  |  |
| --- | --- | --- |
| **00** | **01** | **02** |
| **10** | **11** | **12** |
| **20** | **21** | **22** |

Im2win矩阵

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **00** | **10** | **01** | **11** | **02** | **12** |
| **10** | **20** | **11** | **21** | **12** | **22** |

步长为2，核为2x2

|  |  |  |  |
| --- | --- | --- | --- |
| **00** | **01** | **02** | **03** |
| **10** | **11** | **12** | **13** |
| **20** | **21** | **22** | **23** |
| **30** | **31** | **32** | **33** |

Im2win矩阵

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **00** | **10** | **01** | **11** | **02** | **12** | **03** | **13** |
| **20** | **30** | **21** | **31** | **22** | **32** | **23** | **33** |

步长为2，核为1x1

|  |  |  |
| --- | --- | --- |
| **00** | **01** | **02** |
| **10** | **11** | **12** |
| **20** | **21** | **22** |

Im2win矩阵

|  |  |  |
| --- | --- | --- |
| **00** | **01** | **02** |
| **20** | **21** | **22** |

步长为2，核为3x3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **00** | **01** | **02** | **03** | **04** |
| **10** | **11** | **12** | **13** | **14** |
| **20** | **21** | **22** | **23** | **24** |
| **30** | **31** | **32** | **33** | **34** |
| **40** | **41** | **42** | **43** | **44** |

Im2win矩阵

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **00** | **10** | **20** | **01** | **11** | **21** | **02** | **12** | **22** | **03** | **13** | **23** | **04** | **14** | **24** |
| **20** | **30** | **40** | **21** | **31** | **41** | **22** | **32** | **42** | **23** | **33** | **43** | **24** | **34** | **44** |

步长为1，核为3x2（宽3高2）

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **00** | **01** | **02** | **03** | **04** |
| **10** | **11** | **12** | **13** | **14** |
| **20** | **21** | **22** | **23** | **24** |
| **30** | **31** | **32** | **33** | **34** |

Im2win矩阵

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **00** | **10** | **01** | **11** | **02** | **12** | **03** | **13** | **04** | **14** |
| **10** | **20** | **11** | **21** | **12** | **22** | **13** | **23** | **14** | **24** |
| **20** | **30** | **21** | **31** | **22** | **32** | **23** | **33** | **24** | **34** |

步长为1，核为2x3（宽2高3）

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **00** | **01** | **02** | **03** | **04** |
| **10** | **11** | **12** | **13** | **14** |
| **20** | **21** | **22** | **23** | **24** |
| **30** | **31** | **32** | **33** | **34** |

Im2win矩阵

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **00** | **10** | **20** | **01** | **11** | **21** | **02** | **12** | **22** | **03** | **13** | **23** | **04** | **14** | **24** |
| **10** | **20** | **30** | **11** | **21** | **31** | **12** | **22** | **32** | **13** | **23** | **33** | **14** | **24** | **34** |

**卷积运算**

**卷积核**

|  |  |  |  |
| --- | --- | --- | --- |
| **f00** | **f10** | **f01** | **f11** |

**Im2win矩阵**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **00** | **10** | **01** | **11** | **02** | **12** |
| **10** | **20** | **11** | **21** | **12** | **22** |

**结果**

|  |  |
| --- | --- |
| **00** | **01** |
| **10** | **11** |