

# DAILY ASSESSMENT REPORT

Date:	16/07/2020	Name:	Abhishek M Shastry K
Course:	Mathematics for Machine Learning: Linear Algebra	USN:	4AL17EC002
Topic:	Week 4	Semester & Section:	6 <sup>th</sup> 'A'
Github Repository:	AbhishekShastry-Courses		

## SESSION DETAILS

### Image of session

The screenshot shows the Coursera interface for a programming assignment. The browser tabs include 'Coursera for Students | Coursera', 'Reflecting Bear | Coursera', and 'Classwork for 3rd Year'. The URL is 'coursera.org/learn/linear-algebra-machine-learning/programming/IAKuU/reflecting-bear/submission'. The user is 'Abhishek M Shastry K'. The course is 'Mathematics for Machine Learning: Linear Algebra' and the week is 'Week 4'. The assignment is 'Programming Assignment: Reflecting Bear', which has been passed with 10/10 points. The deadline is 'Pass this assignment by Aug 10, 12:29 PM IST'. The submission history shows a submission on 'July 15, 2020 12:32 PM IST' with a score of 10/10 and a status of 'Yes'. The submission is titled 'Reflecting Bear'.

The screenshot shows the Coursera course overview page for 'Mathematics for Machine Learning: Linear Algebra' by Imperial College London. The user is 'Abhishek M Shastry K'. The course is divided into five weeks. The 'Overview' section shows the progress for each week: Week 1, Week 2, Week 3, and Week 4 are all marked as 'Done'. The 'Week 4' section is expanded, showing 'Matrices make linear mappings'. The 'REQUIRED' section lists two assignments: 'Programming Assignment: Gram-Schmidt Process' (30 min) and 'Programming Assignment: Reflecting Bear' (3h), both with a grade of 100% and due on 'Aug 10 12:29 PM IST'. The 'DUE' section shows the same due date for both assignments.

## Report

### Week 4

- Okay, so let's put all this together. Let's use our transformations knowledge and our basis knowledge in order to do something quite tricky. And see if we can't actually make our life quite simple.
- What I want to do here is know what a vector looks like when I reflect it in some funny plane. For example, the way this board works, when I write on the whiteboard here, if you're looking at it, all the writing would appear mirrored.
- But what we do to make that work is we reflect everything in post-production, left-right, and then everything comes out okay. The example we're going to do here asks what the reflection of Bear, say, something in a mirror would look like to me if the mirror was off at some funny angle.
- Now my first challenge is going to be that I don't know the plane of the mirror very well. But I do know two vectors in the mirror,  $(1, 1, 1)$  and  $(2, 0, 1)$ .
- And I've got a third vector, which is out of the plane of the mirror, which is at  $(3, 1, -1)$ , that's my third vector. So, I've got vectors  $v_1$ ,  $v_2$ , and  $v_3$ , and these two guys are in the plane of the mirror. We could draw it something like  $v_1$  and  $v_2$ , and they're in some plane like this, and  $v_3$  is out of the plane. So, I have got  $v_3$  there,  $v_1$ , and  $v_2$ . So first let us do the Gram-Schmidt process and find some orthonormal vectors describing this plane and its normal  $v_3$ .
- **Key Concepts**
  - ✓ Identify matrices as operators.
  - ✓ Relate the transformation matrix to a set of new basis vectors.
  - ✓ Formulate code for mappings based on these transformation matrices.
  - ✓ Write code to find an orthonormal basis set computationally.