Correction Manual of Ye's Ph.D. Thesis for Original and Library Version

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This article is the correction manual of the doctoral thesis of Qi Ye for its original and library version. Its title is *analyzing reproducing kernel approximation methods via a Green function approach* which is printed at Illinois Institute of Technology in May, 2012. Its corrected version has been updated at Ye's webpage: `http://mypages.iit.edu/~qye3/`.

1. [1, Defintion 6.1 in Section 6.1, pp. 76]:

   In the middle of (i) and (ii),"$\mathbb{R}^d$" is changed to "$\mathcal{D}$".

2. [1, Corollary 6.3 in Section 6.1, pp. 81]:

   In the last part, "$\mathcal{B}^p_\Phi(\mathbb{R}^d)$ *and* $W^m_p(\mathbb{R}^d)$ *are isomorphic, i.e.,* $\mathcal{B}^p_\Phi(\mathbb{R}^d) \cong W^m_p(\mathbb{R}^d)$" is changed to "$\mathcal{B}^p_\Phi(\mathbb{R}^d)$ *is embedded into* $W^m_p(\mathbb{R}^d)$".

3. [1, Remark 6.2 in Section 6.1, pp. 81]:

   In the first sentence, "*the dual space* $\mathcal{B}^p_\Phi(\mathbb{R}^d)'$ *and the dual space* $W^{-m}_q(\mathbb{R}^d)$ *of* $W^m_p(\mathbb{R}^d)$ *are isomorphic, i.e.,* $\mathcal{B}^p_\Phi(\mathbb{R}^d)' \cong W^{-m}_q(\mathbb{R}^d)$" is changed to "*the dual space* $W^{-m}_q(\mathbb{R}^d)$ *of* $W^m_p(\mathbb{R}^d)$ *are also embedded into the dual space* $\mathcal{B}^p_\Phi(\mathbb{R}^d)'$*, i.e.,* $W^{-m}_q(\mathbb{R}^d) \subseteq \mathcal{B}^p_\Phi(\mathbb{R}^d)'$".

4. [1, Section 6.2, pp. 82]:

   Delete the second paragraph and add a sentence "*Using [62, Theorem 19], we can obtain the following theorem directly.*"

5. [1, Theorem 6.4 and 6.5 in Section 6.2, pp. 82–84]:

   To correct the misconception on of dual element map to be linear. the conclusions of [1, Theorem 6.4 and 6.5] are revised to be the fact that *the dual elements of the optimal solutions* s_D *and* $s_{D,L,\Sigma}$ *of interpolations [1, Theorem 6.4] and support vector machines [1, Theorem 6.5] are the linear combinations of* $K(\cdot, \boldsymbol{x}_1), \ldots, K(\cdot, \boldsymbol{x}_N)$*, respectively*.

   Delete the proof of [1, Theorem 6.4]. In the second paragraph of the proof of [1, Theorem 6.5], "*an element of* $s_{f,X} \in \operatorname{span}\{K(\boldsymbol{x}_k, \cdot)\}_{k=1}^N$ *which interpolates*" is changed to "*an element* $s_{f,X}$*, whose dual element belongs to* $\operatorname{span}\{K(\cdot, \boldsymbol{x}_k)\}_{k=1}^N$*, interpolating*" and "*the minimal solution of* $T_{D,L,\Sigma}$ *belongs to* $\operatorname{span}\{K(\boldsymbol{x}_k, \cdot)\}_{k=1}^N$" is changed to "*the dual element of minimal solution of* $T_{D,L,\Sigma}$ *belongs to* $\operatorname{span}\{K(\cdot, \boldsymbol{x}_k)\}_{k=1}^N$".

6. [1, Section 6.3, pp. 84]:

   In the last sentence, "$\mathcal{B}_G^p(\mathbb{R}^d) \cong W_p^m(\mathbb{R}^d)$" is changed to "$\mathcal{B}_G^p(\mathbb{R}^d)$ *is embedded into* $W_p^m(\mathbb{R}^d)$".

7. [1, Bibliography, pp. 126]:

   Reference [10] updates the "*DOI: 10.1007/s10444-011-9264-6*".

8. [1, Bibliography, pp. 127]:

   Reference [22] updates the journal of "*Meshfree Methods for Partial Differential Equations VI, Springer Series: Lecture Notes in Computational Science and Engineering, 2012*".

References

[1] Q. Ye, *Analyzing reproducing kernel approximation methods via a Green function approach* (original and library version), Ph.D. thesis, Illinois Institute of Technology, 2012.